IDG.net

VALLEY DIVERSITY

Some charge that many firms would rather import foreign workers than target local minorities. Page 56

PRIVACY TO GO

Businesses debate whether consumers will opt in for mobile location-based services. Page 46



BRAINS OVER BRAWN

A monkey's brain waves travel over the Internet to move a robotic arm 600 miles away. Page 74

COMPUTERWORLD

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DECEMBER 11, 2000 • VOL. 34 • NO. 50 • $5 COPY

FASTER WEB SURFING HITS THE SKIES

Air Canada offers 56K connection, with limits

BY BOB BREWIN

On five of its long-haul Boeing 767 aircraft, Air Canada last week started providing the same kind of e-mail and Web surfing performance that passengers would experience through a standard dial-up connection on the ground. It's the first such service available to commercial airline passengers anywhere in the world, the carrier said.



Analysts agreed that Montreal-based Air Canada is the first carrier to give passengers onboard Internet connections that match ground dial-up speeds of 56K bit/sec., but they emphasized that all data sent to and from the airplane is still limited by low-speed air-to-ground links that operate at 9.6K bit/sec. on domestic flights and 2.4K bit/sec. on international flights.

Dylan Brooks, an analyst at Jupiter Media Metrix Inc. in New York, said Air Canada's test of its Internet in the Air service marks the "first deployment" of such an airborne Internet system, but he stressed that due to the low-speed downlinks, "it provides limited [Web] content."

The airline plans to test the performance of the system, provided by Tenzing Communications Inc. in Seattle, for six months, according to Joanne

Air Canada, page 93

B2B'S SURPRISE: THE SURVIVORS

Independents sink as consortia thrive

BY JULIA KING
LONDON

Two independent business-to-business exchanges, Promedix and Chemdex, were quietly axed by their parent company last week.



TRANSORA CEO Judith Sprieser

Meanwhile, executives from two of the largest industry consortium-backed online marketplaces, Transora and Exostar Inc., insisted that their exchanges are up, running smoothly and steadily gaining ground with buyers and sellers worldwide, despite reports of bickering among member firms and limited support from suppliers.

That's not the way analysts have been saying things would turn out over the past several months. They have long predicted that independent marketplaces will thrive, while those controlled by industry consortia will get mired in political infighting and brick-and-mortar bureaucracy.

Consortia, page 16

SENATOR ATTACKS DATA SHARING

Effort by 70 e-commerce firms to create standard for customer info draws fire

BY DAN VERTON

A massive effort by dozens of e-commerce companies to share dossiers containing information about consumer buying habits and other personal information came under fire last week when U.S. Sen. Richard C. Shelby (R-Ala.) raised privacy concerns about the effort in a letter to the chairman of the Federal Trade Commission.

A group of 70 e-commerce companies, including IBM, MicroStrategy Inc. and First Union Corp., for the past year have been quietly developing an XML-based data-sharing specification known as the Customer Profile Exchange.

Data Sharing, page 93

JUST THE FACTS

What Is CPE?

Customer Profile Exchange:

- Is an XML-based data sharing specification
- Is part of an ongoing effort by 70 e-commerce companies to create a standard method for pooling data on potentially millions of people
- May be incorporated in software that lets companies track, share and sell personal data



GEORGE WALLMAN

NEXT-GENERATION NETWORKS

BUSINESS EXECUTIVES HAVE GRAND PLANS FOR THE CORPORATE NETWORK: links to global suppliers, ERP, digital video and other bandwidth-hogging applications, plus wireless nets in the field and on the factory floor. That means network managers will need to integrate wired and wireless networks while dramatically boosting network capacity over the next three years. **Bob Brewin and James Cope uncover how leading companies such as FedEx, General Motors and Coca-Cola are preparing to get the job done.** *Story begins on page 76.*

NEWSPAPER

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mission:

create a multi-billion-dollar global marketplace that runs on internet time.

critical:

use a platform you can rely on 24/7.

Microsoft | intel.

freemarkets' world, there's no such thing as quitting time. so they needed a platform that wouldn't punch a clock either. freemarkets selected intel-based servers and the microsoft web solution platform to provide that reliability. and the choice has paid off handsomely. to date, freemarkets has executed over 7,000 online auctions of more than $10.5 billion in goods and services. it's a true global marketplace where buyers and sellers all over the world always get up-to-the-minute, competitive pricing. and it's proof that for many of the world's leading e-businesses, microsoft and intel e-commerce solutions are fast becoming the answer when every mission is critical. see more case studies → *intel.com/go/freemarkets*

BACKUP EXPRESS

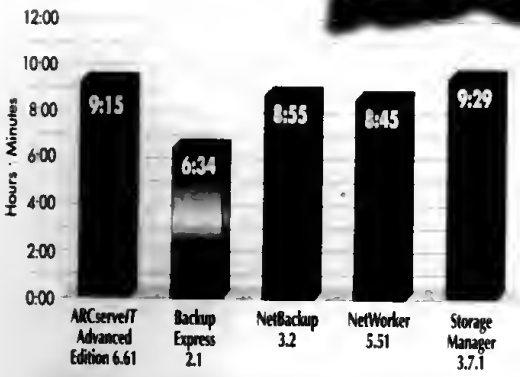
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Independent Test Results

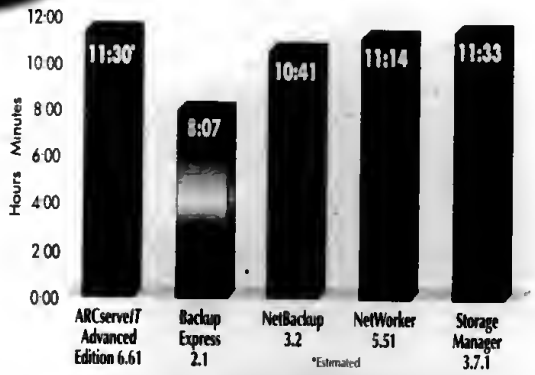
"Taking into consideration all the test factors, including scalability and support, I give the overall edge to Backup Express for its excellent performance and midrange pricing."

"Backup Express' backups and restores were faster than those of the other products."

Tom Iwanski, senior product reviewer,
Windows 2000 Magazine Lab Report (June 2000)



Fastest Backup



Fastest Restore

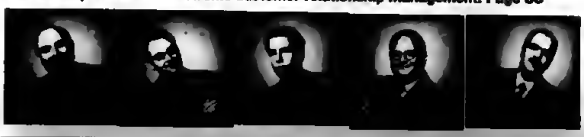
For a FREE copy of the Lab Report or to learn more about Syncsort's Backup Express, visit www.syncsort.com/C0cwb or call (201) 930-8200.

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KEEPING THE CUSTOMER CODDLED

A roundtable discussion explores the issues surrounding organizations' current and future practices in electronic customer relationship management. Page 58





CULTURE CHIC

A year ago, it was tons of stock, cushy consulting gigs or hefty sign-on bonuses that would turn the head of a potential job candidate. Not anymore. Many IT workers have had their fill of high-risk or low-potential jobs in the New Economy. Companies like Minnesota Life are taking advantage, flaunting their more challenging and fun corporate cultures to lure fussy job seekers, say Jean Delaney Nelson and David Rockwell. Page 52

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Ferry tale: Read the winning entry in our "Driving You Crazy!" commuting nightmare contest, along with some of the runners-up.
www.computerworld.com/commute

Caroline Oberg, founder and CEO of an advertising technology firm, critiques e-commerce "solutions" aimed at the advertising industry and says she isn't surprised that they haven't caught on with anyone.
www.computerworld.com/ecommerce

For the latest privacy news, head to *Computerworld.com*'s **Focus on Privacy** page.
www.computerworld. com/privacy

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Simpler Tax Model Nears

Will pave way for taxing Net sales

BY PATRICK THIBODEAU

A [illegible] legislative attack on the sales tax advantage many Internet retailers have over Main Street merchants will begin next year with a drive to simplify the complex, sometimes bizarre sales tax rules imposed on companies.

A group of tax and policy officials from 30 states, meeting as participants in the Streamlined Sales Tax Project, may this month finalize model tax simplification legislation for adoption by state legislatures. Such a tax simplification by itself won't end the Internet's reputation as a sales-tax-free zone, but it will remove a major stumbling block to any [illegible] online sales collections.

Congress isn't likely to support any national legislation unless many states — especially key ones — first agree to simplify the tax rules, said Hank Shattuck, a policy expert at the National Governors' Association in Washington, a participant in the project.

Many large retailers are supporting the action.

The [Internet] pure plays are getting the benefit to build their business and their brand without having to pay the same sales tax that others do," said Robert Molloy, vice president and assistant general counsel at Staples Inc. in Framingham, Mass.

But Seth Geiger, who heads research at BizRate.com, a Los Angeles-based online retail performance comparison service, said its customer surveys show that the absence of sales tax on invoices is a perk for many shoppers. Applying a tax "will put a chilling effect on the growth" on Internet commerce, he said.

Under current law, a retailer doesn't collect sales tax on a purchase unless it has a physical presence in the buyer's state. The buyer owes a "use tax" — the equivalent of a sales tax — but most buyers never pay it, and the states say they stand to lose billions in tax revenue as online sales increase.

Online retailers and trade groups, such as the Direct Marketing Association in New York, say they can't even consider broader tax collection obligations unless tax requirements are simplified nationally. A small online retailer, in particular, could be buried in administrative costs if it had to comply with the laws of more than 7,000 taxing districts, as well as with odd rules. For instance, such rules exempt herbal tea from sales tax in one state but tax it in another, retailing groups say.

The pressure to collect taxes from online retailers seems certain to grow. Consumer Internet spending reached $1.3 billion during Thanksgiving week, a 140% increase over the same week last year, according to The Goldman Sachs Group Inc. in New York and PC Data Inc. in Reston, Va., in a report released last week. But consumer spending at specialty stores in physical malls was down 6.9% from Thanksgiving week last year, based on a sample of stores, according to the International Council of Shopping Centers in New York.

Council research director John Konarski blamed the economy and the longer selling season for the shortfall and said online sales — which account for less than 1% of retail sales nationally, according to government figures — are still having a minor impact. ◗

Taxing Software

New tax software in the works includes the following:

BASIC SYSTEMS Connected to a store's retail systems, these systems calculate taxes on the final bill, as well as remit taxes to the states. If a state conducts an audit, it will examine the software vendor's systems, not the retailer's. The vendor is paid by a percentage of taxes collected, freeing the retailer from the administrative burden.

THE VENDORS Esalestax.com Inc., in Englewood, Colo.; Taxware International Inc. in Salem, Mass.; and Pitney Bowes Inc. in Stamford, Conn., are testing sales tax collections systems.

LEGACY SYSTEMS The states are also investigating the possibility of certifying legacy tax system software typically used by larger companies.

Merrill Lynch to Flip Switch on IP Telephones

BY JAMES COPE

Perhaps as early as this week, Merrill Lynch & Co. in New York will flip the switch on IP telephones at its new Hopewell, N.J., facility, in a move that could potentially yield big savings for the investment giant by eliminating the need to support separate voice and data networks.

The financial services firm is making the move from a private-branch exchange-based (PBX) phone system for employees who work in its private client group to a voice-over IP system from Cisco Systems Inc. in San Jose.

Although vendors have promoted the viability of IP telephony in large corporate environments, industry watchers "were getting a little weary of the stories" and had become anxious to see a large company confirm that the technology is indeed ready for prime time, said Elizabeth Asher, an analyst at Meta Group Inc. in Stamford, Conn.



VICTORIA WEBB anticipates big cost savings.

Officially, IP phone users in Merrill Lynch's Hopewell facility will still be part of a 400-user IP telephony pilot test the company has been conducting during the past year. But most of the kinks have been worked out, said Victoria Webb, director of distributed systems development at the firm.

The phones will carry a bevy of new features. For example, users will be able to configure their phones via the Internet to forward calls to home offices or cell phones or to play specific voice-mail greetings, Webb said.

Moving forward, the Merrill Lynch IP phone system will support unified messaging whereby users will be able to access e-mail, voice and fax messages via the Web, she said.

The IP telephones connect to the same network that desktop computers use, Webb said. Voice calls travel as IP packets inside the company, she explained, and calls going outside the company do so through a network gateway that seamlessly connects IP phone users inside the company to the public-switched telephone network.

Early in the pilot program, IP phone users at Merrill Lynch experienced voice jitter and delay, Webb said. But those problems were resolved after network personnel implemented a quality of service system that prioritizes network traffic according to rules set by the network administrator, she said.

Webb said she believes a big benefit of IP telephony will be future cost savings. "You don't have to maintain separate voice and data networks," she noted. Still, she declined to comment on how much money Merrill Lynch might save by moving to voice over IP.

Analysts have been reluctant to give savings estimates.

For example, Asher said, the "proof on whether IP phone systems save money over traditional PBX-based systems will come three years from now, when we can go back and look at what has been saved." ◗

Unisys to Cut Jobs

Citing declining revenue and profits, Unisys Corp. said last week that it will lay off 1,250 workers worldwide and that it's offering early retirement to some workers. It said about 750 U.S. workers have accepted the packages. Blue Bell, Pa.-based Unisys said it aims to provide services to e-businesses, expand outsourcing to get out of the "middleman" business and create alliances to boost sales. It also may sell its federal computer services division.

More Layoffs at Net Services Firms

Two more Internet services firms reported layoffs in efforts to reduce costs. Scient Corp. last week said it laid off 460 employees – 25% of its workforce – and expected to post a loss for the third quarter. The San Francisco-based consulting firm also said it will close its offices in Silicon Valley and Austin, Texas.

Also last week, Boston-based Viant Corp. in said it's reducing its workforce by 125 people, including 99 consultants, and will restructure to focus on certain markets.

Troubles on DSL Front Spark Job Reductions

HarvardNet Inc. last week joined a growing list of Digital Subscriber Line (DSL) providers announcing layoffs in what analysts say is a trend that will continue until the Internet service providers can offer something other than speed.

Boston-based HarvardNet said it will cut 58% of its workforce, or 280 employees.

Meanwhile, NorthPoint Communications Group Inc. in San Francisco announced a 19% workforce reduction, just one week after Verizon Communications killed a deal with the struggling company.

New Priceline Layoffs

Just a month after laying off 16% of its workforce, struggling e-commerce company Priceline.com Inc. last week said it will cut 48 more jobs – or another 11%, postpone the addition of several new name-your-own-price services and abandon a plan to enter the Japanese market.

BRIEFS

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Dual Portal to British Airways to Serve Small Businesses, Travel Agencies

Will allow direct booking with airline, provide agencies with Web presence

BY JULIA KING
LONDON

British Airways is weeks away from launching a first-of-its-kind Internet portal that will let small businesses in the U.K. bypass travel agencies and book flights directly from the airline. But in an unusual twist, the travel agencies themselves will be able to book flights for their customers through a twin version of the portal.

The new YourTravelManager.com portal will give British Airways PLC (BA) direct access for the first time to the highly lucrative $5.04 billion small business travel market in the U.K. without alienating travel agencies, said analysts.

"I've never heard of anything like it before," said Robert LaFleur, a travel industry analyst at Bear, Stearns & Co. in New York. "My suspicioo is BA's in it primarily to lower costs or gain market share. There's oothing altruistic about it."

The dual-use portal is intended to serve two purposes. First, it should take some of the sting out of the negative impact that direct access to British Airways by small businesses is bound to have on U.K. travel agencies. Currently, more than 90% of small and midsize companies book their travel with the $11.52 billion airline through these agencies.

Second, it will give travel agencies a Web presence that many couldn't afford otherwise, as well as the ability to move their existing customers online. Agencies will pay a transactioo fee of about £3 (about $4.32) per booking of flights and other services on the portal.

Giving the agencies a Web presence will also benefit British Airways, which will require the ageocies to funnel all customer data they receive via tbe portal back to the airline. Eventually, the U.K.-based airline plans to use this highly coveted data to develop and sell new personalized services such as insurance, automated expense-report manageoeot and credit cards.



PARKS-SMITH: Web portal opens the door to new markets.

"This lets us access and transact in markets that we've never been in before," said Simoo Parks-Smith, head of the company's business-to-business e-commerce unit.

Parks-Smith said the plan is to eventually expand the portal worldwide.

In the U.S., small and medium-size companies already have direct access to British Airways via a link into its reservation systems, built by Menlo Park, Calif.-based GetThere Inc. Large corporate customers worldwide have direct access to the airline via some 170 private extranets, which generate more than 40,000 hits per week, according to British Airways.

Parks-Smith said the new portal took seven months to develop and cost less than $1.44 million.

The new system iocorporates GetThere's online flight-booking engine. The remainder of the system was developed at British Airways' 120-person e-commerce unit formed in April.

British Airways Swaps Out Custom Supply-Chain App

BY MARC L. SONDINI

British Airways PLC is looking to become more competitive by swapping out its home-grown supply-chain planning software for a more advanced third-party vendor's package, which it hopes will be easier to maintain and use.

The U.K.-based company's engineering division announced recently it was installing into its planning centers at Heathrow and Gatwick airports a new inventory management application to handle the 600,000 aircraft parts used worldwide. The new module will integrate with SAP AG's R/3, which the airline is installing to replace its existing 150 custom-written enterprise resource planning applications.

Although there is a planning module in the SAP repertoire, the airline said that module lacks advanced industry-specific planning features it needs.

British Airways Engineering, which employs 9,000 people in more than 100 locations, will use Fairport, N.Y.-based Xelus Inc.'s XelusPlan software.

The airline claims it will be able to save money and optimize the management of its $790 million worth of inventory without sacrificing the quality of service on its aircraft. The firm declined to divulge the estimated deploymeot cost.

"We are implementing SAP R/3 over the next couple of years and saw a clear need for sound inventory planning as part of this implemeotation," said David Richardson, general manager of engineering supplies at British Airways.

Improved procuremeot planning will improve service levels in the aircraft maintenance hangars and reduce the amount of parts the airline keeps on hand to those needed most frequently, he said.

British Airways is one of several firms in the airline industry that have turned to third-party vendors. Others include Alaska Airlines Inc. in Seattle and Dallas-based parts distributor Aviall Inc. The move may give British Airways a market lead, said Richardson.

Inventory management is a "big, hot area" for airlines, said Larry Lapide, an analyst at AMR Research Inc., a consultancy in Boston. When up and running, the inventory management application will do such things as track what's being used and forecast what needs to be there, he said. Other tools will do things like ensure that out-of-stock parts can be flown in within hours from another airport, said Lapide.

A plane stuck on a runway costs an airline about $23,000 per hour, said Richardson.

British Airways plans to wrap up the implementation next month. One of the biggest challenges will be unplugging tbe existing system and going live with XelusPlan, said Richardson.

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>
> DAVID RICHARDSON, BRITISH AIRWAYS

Amadeus, Galileo Raise Fees Despite Analysts' Warnings

Airlines won't like boosts of 6% to 7%

BY MICHAEL MEEHAN

Two computer reservation systems (CRS) firms are increasing their per-ticket reservation charges by 6% or more next year so they can build next-generation Internet systems. But analysts said the increases indicate the companies are doing too much business as usual.

This month, Amadeus Global Travel Distribution SA said it will increase its per-ticket reservation charge to airlines by 6.9%, and Galileo International Inc. said it will increase its average booking fee by 6%.

But figuratively, the charges are much higher than that, said Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass. "They've just increased the hatred the airlines have for them [by] 6% to 7%," he said.

He praised Worldspan LP's move to reduce CRS fees oo trips booked through corporate online systems, including those of GetThere Inc. in Menlo Park, Calif.; e-Travel Inc. in Waltham, Mass.; and Worldspan's Trip Manager system.

Harteveldt said Worldspan is taking the savings offered by new technology and passing them along to its customers.

The CRS giants — Galileo in Rosemont, Ill.; Amadeus in Madrid; Worldspan in Atlanta; and Sabre Inc. in Fort Worth, Texas — built their businesses by controlling the connectivity between travel agencies and travel suppliers.

Harteveldt said direct-link corporate booking tools like those offered by GetThere could easily be spun off to include travel agencies, thus eroding the CRS industry base.

Krista Pappas, an analyst at Gomez Advisors Inc. in Lincoln, Mass., said it's incumbent on the reservations companies to show significant changes in the next year. "It's fair game for anyone out there to be an intermediary," she said.

An October study from PhoCusWright Inc. io Sherman, Conn., praised the initiative of the CRS companies to evolve from pure reservation-based technology suppliers to firms that dabble in every area of travel technology. PhoCusWright analyst Lorraine Sileo said those companies are becoming less dependent on booking fees.

AT&T and Cingular Enlist Partners for Spectrum Bids

Giants may get FCC minority credits by using little-known firms as surrogates

BY BOB BREWIN

THE TWO companies that anted up the largest payments — $238.8 million apiece — for this week's Federal Communications Commission auction of cellular spectrum aren't exactly household names.

But those high opening bidders, Alaska Native Wireless LLC and Salmon PCS LLC, have partnered with two of the biggest names in the business — AT&T Wireless Group and Cingular Wireless.

Ken Woo, a spokesman for AT&T Wireless, confirmed that the Redmond, Wash.-based company has a 39% ownership stake in Fairbanks-based Alaska Native Wireless.

Atlanta-based Cingular Wireless put up 85% of the equity for Salmon PCS, Cingular spokesman Cal Owen said. But, he added, Salmon PCS is controlled by George Crowley in Chevy Chase, Md., who put up the remaining 15% in the company. In the past, Crowley has partnered with San Antonio-based SBC Communications Inc., which, along with Atlanta-based BellSouth Corp., owns Cingular Wireless.

Alaska Native Wireless is backed by three federally established Alaska Native Regional Corporations: Arctic Slope Regional Corp. in Anchorage, Sealaska Corp. in Juneau and Doyon Ltd. in Fairbanks. Jacob Adams, president of Arctic Slope, said in a statement that the company views its bids as a "business opportunity which will benefit [our] 40,000 Alaska Native shareholders and their families."

Focus on the 'Lower 48'

Rosemarie Maher, president and CEO of Sealaska, said Alaska Native Wireless intends to focus its bids on spectrum in what she called the "lower 49 [states'] markets," adding that the company also plans to participate in an FCC-backed tribal lands initiative to bring advanced communications to Native Americans.

Ken Dulaney, an analyst at Gartner Group Inc. in Stamford, Conn., said he found it surprising that two major companies such as AT&T Wireless and Cingular would use surrogates in such an important auction "unless they get some sort of a minority credit."

The FCC said it would provide bidding credits for small and very small businesses in the auction of spectrum in the 1,890- to 1,990-MHz band that starts tomorrow. The FCC qualified 87 bidders for the auction. In total, those bidders made up-front payments of $1.8 billion.

Dulaney said the auctions are important to cellular carriers that require additional spectrum to provide country-wide coverage.

This week's spectrum auctions cover frequencies adjacent to the existing cellular telephone spectrum in 195 markets nationwide, and major carriers plan to use the auction to fill gaps in their coverage.

Kansas City, Mo.-based Sprint PCS Group, which made an up-front payment to the FCC of $69 million, expects to use its licenses to fill coverage gaps, according to company spokesman Dan Wilinsky. ◗

AT A GLANCE

Cellular Auction

- AT&T-backed Alaska Native Wireless and Cingular Wireless-funded Salmon PCS made largest up-front payments: $238 million apiece.
- A pool of 87 qualified bidders made total up-front payments of $1.8 billion.
- The auction covers cellular licenses in 195 markets in frequency bands adjacent to existing bands used by wireless carriers such as Sprint PCS.
- Major carriers plan to use the auction to fill gaps in their coverage areas.
- The auction starts tomorrow, with two bidding rounds per day until the frequencies in all markets are sold.

Coke Launches Wireless Location Service

Cola maker aims to lay foundation for mobile commerce

BY BOB BREWIN

Driving around and really need a Coke and a pizza? The Coca-Cola Co. has a fix for that problem through a $36 million deal it signed last week to provide consumers equipped with wireless Web phones the location of the nearest fast-food outlet, convenience store or gas station serving its products.

Atlanta-based Coke said it views the deal with Go2 Systems Inc. as the foundation for a mobile commerce system that will drive consumers to the fast-food, convenience-store and restaurant customers of its fountain division, according to Everett Darby, director of e-ventures at Coca-Cola North America.

"This creates a lot of value for our customers by putting a mobile commerce platform in place for them. It provides them with different advertising options and a new way to market to consumers," Darby said.

The Go2 system could be used to provide electronic coupons to consumers over wireless phones, with that function driven by their location, said Darby. Major carriers offering Go2 location services include BellSouth Mobility DCS, AT&T Wireless Group, Sprint PCS Group and Verizon Wireless Inc.

Grabbing Mobile Consumers

Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., said he believes Coke is jumping on a technology that will attract more and more mobile consumers — as well as firms that want to reach them.

"Location [services] are hot, and I expect you'll see more deals like this in the future. ... This is location-specific advertising," he said.

Lee Hamilton, president of Irvine, Calif.-based Go2, said the Coke deal ensures that outlets aligned with Atlanta-based Coca-Cola receive premium placement on Go2's Web sites at a "substantial reduced rate" from the $150 to $250 per year the company usually charges.

Hamilton said consumers could access the location of a variety of outlets by inputting a street address into the company's wired or wireless Web sites, which returns "turn-by-turn driving directions" to reach the location.

Both Darby and Hamilton said they agree that location-based services will improve when wireless carriers start offering automatic location services starting next year, as required by the Federal Communications Commission.

Several vendors offer Global Positioning System receivers for personal digital assistants today, and Hamilton said any user with such a device already benefits from that type of automatic location technology.

Officials at PepsiCo Inc. in Purchase, N.Y., Coke's archrival, didn't provide details of its wireless location plans by press time. ◗

JUST THE FACTS

One for The Road

Coca-Cola's $36 million pact with Go2 Systems is:

- Designed to drive consumers to fast-food chains, convenience stores and other outlets that serve Coke products.
- Viewed as the foundation of a mobile commerce system that could include electronic coupons.

Pentagon Awards $72M Wireless Contract to Iridium

BY TODD R. WEISS

A two-year, $72 million contract to provide secure wireless communications to approximately 20,000 government employees was awarded last week to Iridium Satellite LLC, which only months ago had considered decommissioning its satellites.

Iridium Satellite is the successor to Reston, Va.-based Iridium LLC, which was backed by Schaumburg, Ill.-based Motorola Inc. and went bankrupt last year.

Under the contract, the Defense Information Systems Agency will pay Arnold, Md.-based Iridium Satellite to give its employees unlimited airtime for wireless phone calls. The agency said it signed the agreement because the Iridium system offers mobile, cryptographically secure telephone services that aren't currently available to government users, via small handsets, anywhere on the globe.

Meeting Expanded Needs

By adding Iridium to its existing telecommunications network, the U.S. Department of Defense said, it will be able to increase service to meet expanded wireless communications where they're needed, including in the Navy, Special Forces operations and other organizations.

A spokeswoman at the Department of Defense had no comment on the contract.

If the Defense Department is satisfied with the service, there are options that can be exercised that could bring the total value of the contract to $252 million through December 2007. ◗

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Sun Releases Java Tools Updates

BY LEE COPELAND

New updates to Sun Microsystems Inc.'s Forte for Java development tools offer developers quick access to online Java plug-ins, a move that users and analysts said should make it easier to find code components.

Sun this week will announce Forte for Java Version 2.0. New features include the ability to create and debug JavaServer Pages (JSP), support for the Java Data Object (JDO) interface to databases and team source-code management.

Sun developed the product using a publicly available code base. The Community Edition is offered as a free download at *www.sun.com/forte/ffj/ce*. The Internet Edition costs $495 and includes support for plug-in modules, which let developers download code fragments as needed from the Web.

By giving developers access to plug-ins on the fly, Sun hopes to make it easier to find objects and components, thus speeding up application development times, said Drew Engstrom, Sun's product line manager.

For example, a developer looking for a JDO to connect to a data store will be pointed toward Sun's Web site to dynamically retrieve the needed object, Engstrom said.

Shorter Search, Faster Access

It's a move that should cut down search times and give developers faster access to objects, said Tracy Corbo, an analyst at Hurwitz Group Inc. in Framingham, Mass.

"One thing Sun learned from client-side Java was that the performance stunk," Corbo said. "They're trying to find ways to optimize performance by offering smaller chunks of code for download."

Alvin Thompson, a software engineer at Baltimore Biomedical Inc., a medical analysis toolmaker in Baltimore, said the dynamic plug-in feature in Forte for Java should save developers time in searching for the bits of code needed to develop an application.

"Speed was an issue when Java first came out," but it isn't now, he said. "The plug-in model offers an advantage of minimizing network traffic, because you only get what you need."

Users said the new version of the tool set also puts more emphasis on complex computing environments.

"We're moving to JSP, [Enterprise JavaBeans] and XML as [our] primary development platform because our projects are more complex and you cannot do complex processing with HTML pages, other than presenting simple bits of text," said Jose Ivey, chief technology officer at Doublespace, a Web integrator in New York.

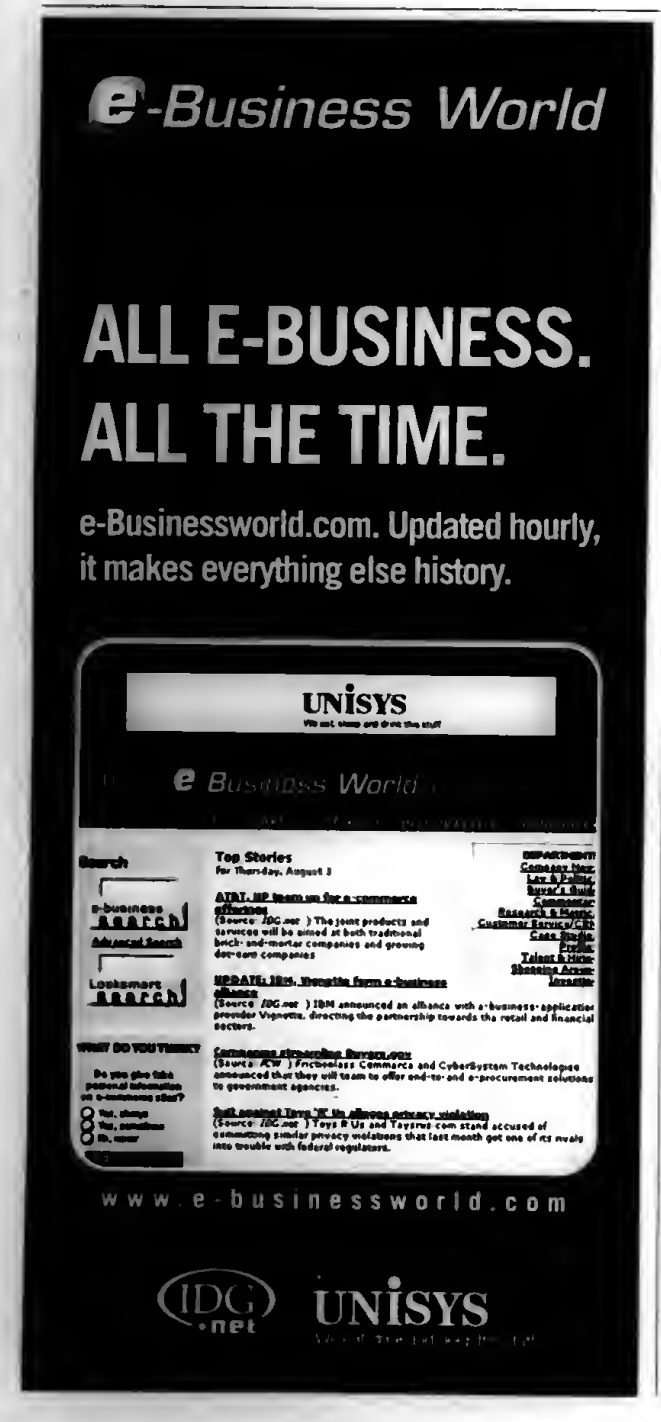
The updates to Forte for Java are memory-intensive, and Peter O'Kelly, an analyst at Patricia Seybold Group in Boston, recommends that developers use computers with at least 256MB of memory.

JUST THE FACTS

Forte for Java 2.0

Available next month, it will include the following:

- The capability to create and debug JavaServer Pages
- Support for the Java Data Object interface to databases
- Team source code management utilities such as version control
- Dynamic plug-in lookups over the Web in the Internet edition



Carnegie Mellon, NASA Consortium To Research 'Dependable' Software

BY LINDA ROSENCRANCE

Carnegie Mellon University, NASA and 12 major IT companies are expected to announce today the formation of a computing consortium to promote and conduct research for the development of highly dependable software systems.

The 12 companies have agreed to work with NASA and Pittsburgh-based Carnegie Mellon to develop the consortium, whose goal will be to eliminate failures in critical computing systems. Such systems include those used in space missions, defense, health care, e-commerce and any systems affecting human safety or well-being.

NASA and Carnegie Mellon declined to release the names of the 12 IT firms until today's formal announcement.

Duane Adams, Carnegie Mellon's vice provost for research, said dependable software systems are those that don't crash or malfunction.

"These are systems that can function in an environment of unanticipated problems," he said. "The whole problem of dependable software is an important one, but one that is not usually solved."

For example, Adams said, these systems will be used in NASA's mission-critical operations, where failure isn't an option. "Part of the problem is that many of these systems are used remotely and operate autonomously," he said. "If you send a robot into space and it lands [on Mars, for example,] and it doesn't work, there's no one to step in and fix it." Adams said the technological challenge for the consortium will be developing these systems at an affordable cost.

The consortium, part of Carnegie Mellon's plans to establish a presence in Silicon Valley, will be housed on a satellite campus to be built in Moffett Field, Calif., the site of NASA's 2,000-acre Ames Research Center.

NASA officials couldn't be reached for comment.

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BRIEFS

Merrill Lynch Offers Workers Seed Money

Looking to advance technological innovation in the financial services industry, New York-based Merrill Lynch & Co. has launched an internal venture capital fund to seed in-house technology brainstorms. The venture will fund and support business plans created by Merrill Lynch employees in areas such as IT infrastructure, mobile technology and data management.

Pentagon Seeks IT Reservists for Centers

The Pentagon last week announced the formation of five technology centers that, beginning next year, will be staffed by reservists who will work in the private sector by day and spend one weekend per month defending the U.S. Department of Defense against cyberattacks.

The Pentagon said the teams of reservists could be involved in a wide range of efforts, including enemy computer network attacks and the defense of critical U.S. infrastructures and vulnerability assessments.

Microsoft Releases Beta Specification

Microsoft last week announced the release of the beta specification for XML for Analysis, a proposed standard governing the transfer of information between databases for use in data-mining applications. XML for Analysis is an extension to Microsoft's OLE DB for OLAP and its OLE DB for Data Mining.

Feds to Increase IT Services Spending

The amount of money the federal government spends on vendors for outsourcing and other IT services will increase from $30.2 billion this year to $40.3 billion in 2005, according to Input, a Chantilly, Va.-based market research firm.

Electronic government initiatives, which are getting 24% of federal IT services funds next year, are projected to receive 28% of the pie by 2005.

European Cybertreaty Raising Concerns

Companies, privacy advocates have questions about agreement's impact

BY PATRICK THIBODEAU
WASHINGTON

MANY countries haven't updated their laws to cover Internet-based crimes, leaving companies without legal protection from malicious hackers and data theft in many parts of the world, according to a new report.

But some companies may not necessarily like some of the laws that are emerging. Of special concern is the cybercrime treaty being developed by the 41-nation Council of Europe, which could have an effect on corporate data retention policies.

Protecting Rights

Privacy advocates have also raised an alarm, saying the treaty may tread on privacy rights.

"We are going into an area where the problem is not too little law but too much law," said James Dempsey, senior staff counsel at the Washington-based Center for Democracy and Technology, at a forum here last week on international cyberlaw.

The picture painted by Dempsey on the cyberlaw status of various nations stands in contrast to a report prepared by Bruce McConnell, who led the International Y2k Cooperation Center. McConnell's report looked at the laws of 52 countries and found that only nine of those nations have substantially updated laws.

But what is clear is that countries are updating laws.

"There is competitioo among countries for leadership and excellence in the digital economy," said McConnell. "There is a kind of race to see which countries are going to be the leaders in this new way of doing business."

The intent of the cybercrime treaty — which could be ready for approval by the middle of oext year — is to help law enforcement agents fight back against hackers and child pornographers by easing cooperation among police.

The treaty also seeks to prevent data bavens — areas of weak laws, said Henrik Kaspersen, who is chairing the Council of Europe's Committee of Experts on Crime in Cyberspace.

Areas of Concern

The treaty, however, has left companies such as Clinton, Miss.-based WorldCom Inc., uncertain about what its legal requirements or liability risks will ultimately be, said Theresa Swinehart, associate general counsel at WorldCom. "There is so much gray area," she said.

A key area of concern is data retention. Internet service providers are worried that they may face new obligations to retain data in response to requests from law enforcement agencies.

For instance, the treaty as it currently stands could enable countries to demand that companies retain data sought for investigation for as long as they want, said WorldCom officials.

"Clarification on the data retention issue is going to be needed," Swinehart said.

France appeared on McConnell's list of legal laggards, but Dempsey, citing a recent court ruling in that country requiring Santa Clara, Calif.-based Yahoo Inc. to prevent French citizens from trafficking Nazi paraphernalia, said the court action illustrates the point that there are too many laws on the books already.

"I don't think [France] can be characterized as a hacker haven," Dempsey said. ▶

Cybertreaty

The Council of Europe is developing a treaty to make it easier for law enforcement authorities to track cybercriminals.

Corporate view: Companies say the treaty may impose new data retention requirements and increase their legal liability.

U.S. government's view: Governments have much to gain if the treaty can remove or minimize procedural and jurisdictional obstacles.

Study: IT Employees' Work Hours Rise 30%

Turnover, salaries also show increases from last year

BY JULEKHA DASH

IT professionals have spent one-third more hours on the job this year than they did last year, according to a report issued last week by Meta Group Inc.

Analysts and users attributed the rise to time spent learning new technologies and additional work from the increasing threat of new viruses.

"I don't want to say that we're at the dawn of the IT sweatshop, but we're getting there," said Howard Rubin, a research fellow at Stamford, Conn.-based Meta Group.

The study, based on an online survey of approximately 3,000 IT managers and executives, reported that IT spending among U.S. companies increased 8.7% this year.

As a result, said Rubin, IT workers are spending more time on the job, earning new technologies in addition to doing their existing work.

But Tom Bachrach, a senior systems engineer at New York-based brokerage firm Salomon Smith Barney Holdiogs Inc., attributed his longer work hours to more time spent handling computer viruses.

Turnover and Salaries Rise

Another survey finding was that employee turnover at U.S. companies rose 2% from last year.

U.S. IT Workforce

Average Hours Worked
2000: 2,157 hours
1999: 1,375 hours

Turnover
2000: 10.2%
1999: 7.9%

Average U.S. Salary

2000:	
Project leader:	$67,815
Development/ programmer:	$60,128
2001:	
Project leader:	$75,562
Development/ programmer:	$66,961

SOURCE: META GROUP INC., STAMFORD, CONN.

Bachrach said he thinks some IT workers leave their positions because they get frustrated at companies that are reluctant to use newer technologies.

"Corporations are extremely reluctant to jump on the bandwagon [with] new technology," said Bachrach. That makes it difficult for an IT employee to increase skills and salary, he said.

Salaries for IT professionals rose by 6.6% this year, with the greatest increase in networking- and Internet-related areas. That figure is close to the 6.8% gain reported by RHI Consulting, an IT staffing firm in Menlo Park, Calif.

In a report released last week, RHI predicted that average starting IT salaries would rise even more next year, by an average of 8.4%.

However, the report said, some categories of workers — such as chief technical officers, e-commerce specialists and business systems analysts — will see salary increases of 10% to 11%. RHI attributed the increase to strong projected IT hiring activity next year. ▶



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GM Isuzu Taps Sagent App To Improve Data Quality

Software to condense customer records

BY DAN VERTON

GENERAL MOTORS Isuzu Commercial Truck LLC may soon have a leg up on the competition, thanks to a pilot program designed to standardize and improve customer and prospective-customer database record matching.

Through a consulting agreement with The Polk Co., an automotive intelligence consulting firm in Southfield, Mich., GM Isuzu has started testing Sagent Technology Inc.'s Centrus Online data-quality software.

The pilot is designed to enable the automaker to combine the best mailing-address data with the most appropriate target contact information to increase its direct-mail response rates and improve customer service.

Cerritos, Calif.-based GM Isuzu said it plans to make a final decision on the use of the software as early as next month.

So far, the use of Centrus Online has enabled GM Isuzu to improve the process of matching records with contact names, said Howard Ildvad, operating manager of market research and database management at GM Isuzu. The company is condensing all customer records and competitive and prospective sources into one record per customer.

Ildvad described the process that Mountain View, Calif.-based Sagent's software is now supporting as the "heart and soul of our entire marketing database."

Centrus Online cleans, geocodes, appends and profiles customer and prospect files securely through an online interface. It allows firms to view customer information down to the neighborhood or household level, using U.S. Census Bureau data.

In the GM Isuzu pilot, IT systems at Polk send one customer record at a time over the Internet to Centrus Online. The software corrects and expands the record before sending it back.

Phil Russom, an analyst at Hurwitz Group Inc. in Framingham, Mass., said such technologies can add value by appending additional information. For example, if someone calls a help desk, the software can capture the caller's phone number and then use data-quality software to look up that person's name and address.

A recent advancement in data-quality software is its ability to perform many of its functions in real time on a per-record basis, Russom said.

The GM Isuzu pilot project is an important development for Sagent as its new CEO, Ben Barnes, steers the company toward future growth.

Barnes, a seven-year IBM veteran who headed that company's Global Business Intelligence Solutions unit, took over the CEO post at Sagent in August. ▶

Sun Releases New Clustering Software

App management made for Unix

BY JAIKUMAR VIJAYAN

Sun Microsystems Inc.'s new Sun Cluster 3.0 software should deliver mainframelike application management capabilities to the commercial Unix market, users and analysts said. Sun last week enhanced its Solaris 8 operating system with new software extensions that allow users to manage as many as eight Solaris 8 servers in a cluster configuration.

Clustering increases the reliability and scalability of servers by linking two or more of them together and harnessing their combined resources.

Operating systems such as IBM's OS/390 and Compaq Computer Corp.'s OpenVMS have offered sophisticated clustering capabilities for several years. Apart from boosting the reliability and scalability of applications, both these technologies also offer workload balancing, monitoring and centralized management capabilities, analysts said.

Sun's effort is among the first by a vendor to bring similar capabilities to the Unix space, said Jean S. Bozman, an analyst at IDC in Mountain View, Calif.

"The bottom line is that this brings a new level of functionality to Sun's clustering [system]," Bozman said. "As Sun's servers move higher into the food chain, they are beginning to take the management characteristics of the mainframe."

For instance, Sun Cluster 3.0 features mechanisms for deploying and centrally managing changes to application services and resources across the entire cluster. The software also supports services that let an application be installed once and run everywhere on the cluster.

Also supported are features for letting users add and remove resources from the cluster without having to bring the entire system down. The software supports new workload distribution capabilities.

Sun Cluster 3.0 also comes with support for automated fault detection and fault-isolation capabilities and automated recovery from failures.

The challenge that Sun is trying to solve, said Mark Ryan, chief technology officer at Weather.com, is to be able to keep critical systems up and running without worrying about managing the underlying technology. Weather.com is the online unit of The Weather Channel Inc. in Atlanta.

Key elements of Sun's new technology include its support for high application availability, "its proactive workload management and its support for centralized system management of all my applications," Ryan added.

"What Sun is doing is taking advantage of clustering to give users a way of managing their resources more effectively," said Joyce Becknell, an analyst at Aberdeen Group Inc. in Boston. ▶

Key Capabilities

Also announced last week, Sun Management Center 3.0 offers the following features:

- A group operations capability that **lets managers centrally administer** the installation of modules and services across the network
- A new **hardware diagnostic suite**
- **Enhanced** predictive management **capabilities**

Some SAP Customers Have Lengthy Holiday Wish Lists

Industry-specific tools requested

BY MARC L. SONGINI

A group of SAP AG customers said they're wishing for new modules, a clearer technology road map and greater interoperability with other enterprise resource planning (ERP) software in the year to come.

A number of users and analysts at an SAP educational event in Waltham, Mass., last week discussed their feelings about the firm's recent moves and the issues they would like the company to address.

SAP has lately been in significant transition, actively trying to court small and medium-size businesses, webify its applications and move into the marketplace arena through its SAPMarkets Inc. partnership with Pleasanton, Calif.-based Commerce One Inc.

Eric Bloom, vice president of IT at Endo Pharmaceuticals Holdings Inc. in Chadds Ford, Pa., which uses R/3, said his company could use more industry-specific modules that can easily share data to improve business operations.

Additionally, Bloom said, he would like a product that would help his company track sales to different types of customers, such as retailers and wholesalers.

An SAP spokesman said the company is working with pharmaceutical firms to address those needs.

Another user said he would like a very specific rules-based tool to assist with quality control in the complex titanium-manufacturing process.

"Quality management is big in our industry," said Troy Cook, director of business information services at Niles, Ohio-based RTI International Metals Inc.

An SAP spokesman said the company is also working with RTI and a number of other titanium companies to come up with an industry-standard product to handle the necessary specifications. ▶

WISH LIST

What I Want From SAP

Some of the things users want to see from SAP:

- More **industry-specific tools**
- **Continued exposure** of Sap's new e-business message
- **Greater interoperability** among SAP and other ERP vendors' products
- **Greater granularity** in SAP modules
- **Clearer road map** for SAP migrations



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Ford, GM Almost Ready To Shut Own Exchanges

Both will shift transactions to Covisint

BY LEE COPELAND

GENERAL MOTORS Corp. and Ford Motor Co. are set to pull the plug on TradeXchange and AutoXchange, their respective online procurement marketplaces, in favor of Covisint, the massive automotive marketplace they founded with DaimlerChrysler AG.

The shutdowns are no surprise, but they signal to suppliers that the automakers won't return to their partisan online turf, analysts said Covisint faces a long, rough road ahead.

It's important that the automakers show continued commitment to Covisint because "nobody believes that it's off the ground yet," said Laurie Orlov, an analyst at Forrester Research Inc. in Cambridge, Mass. "Among suppliers, it's not looming as having short-term importance."

If Southfield, Mich.-based Covisint gains wide support, it could handle billions of dollars annually in a wide range of procurements, from office supplies to core materials. The exchange began taking basic orders in October, but it still has some arduous technology tasks to tackle, such as getting suppliers and systems connected online.

"The biggest challenge now is getting the legacy and back-office systems of the supply base connected to it," said Harold Kutner, group vice president of worldwide purchasing at GM, in Detroit. "The worst thing we could do is have a product out there that frustrates the supplier community."

And that type of integration work doesn't come cheap. Covisint's founders have anted up more than $200 million thus far.

Kevin Prouty, an analyst at AMR Research Inc. in Boston, estimated that it will cost an additional $150 million to $200 million before the start-up turns a profit. "Any e-business endeavor has the potential to be a learning mistake or a market changer," he said. "Covisint is not a short-term return. If the automakers cut discretionary spending, will they have the heart to keep Covisint running past next year?"

GM and Dearborn, Mich.-based Ford have already incurred the costs of developing and operating their own exchanges, which became lame ducks after the Big Three announced Covisint last February. DaimlerChrysler didn't have an independent exchange in operation.

Susan DeSandre, a former vice president at AutoXchange and now on loan to Covisint as vice president of operations, said Ford is migrating its customers off of AutoXchange.

Ford plans to have its operations shut down by mid-January; GM plans to shutter its exchange by year's end.

The shutdowns would have come sooner, but antitrust investigations in the U.S. and Germany meant that for seven months, Covisint was unable to incorporate, conduct transactions or hire a CEO. Those probes also ate up additional funding.

Kutner said Covisint will legally incorporate, officially start hiring its staff, now on loan from its founders, and name a CEO by year's end.

"It was expensive," said Kutner. "We spent a lot of money with this FTC thing and had all these people on the payroll developing product, and we couldn't do anything."

With their private exchanges now defunct, GM and Ford must demonstrate to suppliers that there's only one road ahead.

"There was not that much going through the independent exchanges," said Carl Lenz, an analyst at Gartner Group Inc. "But now, the suppliers are assured that they will only have to deal with one exchange."

Automakers Plan Parts Portal

The Big Three automakers are at it again, teaming up this time on a business-to-business parts portal.

GM, Ford and DaimlerChrysler last week announced the joint venture. Skokie, Ill.-based Bell & Howell Co. will build the unnamed Web site.

The automakers said the repair parts portal will initially launch in the U.S. and Canada and allow dealers to sell manufacturers' repair parts to collision shops and others. Each of the four companies has a 25% equity stake in the new venture, which is slated to open early next year.

Like Covisint, the other B2B venture launched by the Big Three in February, this one is aimed at reducing supply-chain costs, streamlining transaction times and improving the flow of information.

Kevin Prouty, an analyst at AMR Research, said the portal looks like a step in the right direction for auto dealers. "This is really a shot at trying to make the dealers happier in how they work with the automakers," he said, adding that there are few dealers that work exclusively with one automaker.

The portal will compete with already-launched online parts exchanges, such as Tokyo-based Toyota Motor Corp.'s I-Star and Dayton, Ohio-based start-up ChoiceParts LLC's site. It also isn't likely to gain easy acceptance among dealers, Prouty said, predicting that the automakers will have to "convince dealers to use it."

The portal will use CollisionLink, an online system developed by Bell & Howell, to provide cost estimates on parts and to process orders.

– Lee Copeland

Ford Names Bank Exec CIO

BY TODD R. WEISS

For the second time in less than two years, Dearborn, Mich.-based Ford Motor Co. has named a new CIO.

In an announcement made earlier this month, the automaker named Marvin Adams, a former executive vice president and CIO at Chicago-based Bank One Corp., to succeed Jim Yost. Yost had served as CIO since July of last year.

Yost, who joined Ford in 1974, will become vice president of corporate strategy, a new position at the company.



NEW FORD CIO Marvin Adams

"It's not unusual for us to move folks around at Ford," said Ford spokesman Ron Iori, when asked if this represents a demotion, promotion or lateral move for Yost.

"[Yost] has got a very different background than a normal CIO would," Iori said. That was a plus because Yost consequently came in with new ideas and approaches, he added.

Now, the company is bringing in a CIO with a "mainstream technology background," Iori said. "This is a pretty typical move for us."

Neither Adams nor Yost was available for comment.

Continued from page 1

Consortia

"*Consortium* sounds laden with committee structure and like it goes at a snail's pace," said Judith Sprieser, CEO of 9-month-old Transora, the Chicago-based exchange sponsored by 54 of the world's biggest consumer packaged goods companies.

The reality, she told attendees at a business-to-business e-commerce conference here, is that Transora has 250 employees, 100 of whom are on loan from member companies, including Unilever PLC, Procter & Gamble Co. and Nestle USA Inc. All the members are buying and selling goods and electronically managing a portion of their supply-chain activities through the exchange.

In the aerospace industry, Washington-based Exostar, which was launched in March by Raytheon Co., BAE Systems Inc., Lockheed Martin Corp. and The Boeing Co., has created electronic XML-compliant catalogs on the exchange for 50 suppliers of indirect goods and has 100 more under contract, according to Stephen O'Sullivan, executive vice president of the exchange.

In return, the suppliers pay a fee of about $3,000 and can upload the newly digitized catalogs to other exchanges they may choose to join, O'Sullivan said. This capability has been a key factor in attracting suppliers to the exchange, he added.

But analysts said it's the sheer "gorilla" buying power that consortia wield that is working more than anything else — especially technology — to drive in suppliers.

"Consortiums definitely have channel power, which means they have the ability to coerce small suppliers," said Karen Peterson, an analyst at Gartner Group Inc. in Stamford Conn.

But they also have potentially devastating weaknesses, including incohesive management that leads to an inability to move quickly with the market, said Jon Ekoniak, an analyst at Piper Jaffray Inc. in San Francisco.

"If there is one group with the best opportunity for success, it's private marketplaces," Ekoniak said.

But last week, two independent B2B exchanges — Promedix, a specialty medical products marketplace, and Chemdex, a life sciences marketplace — were unplugged. Parent company Ventro Corp. in Mountain View, Calif., said it will lay off 235 workers and take a loss of up to $410 million for the closings, effective in the first quarter of next year.

Gartner estimates that some 30,000 private exchanges are in various stages of development, compared with about 600 public exchanges currently in operation.

"In the near term, I see private marketplaces, such as those operated by Wal-Mart, Dell and Cisco, as the best in terms of value they deliver," said Ekoniak. "Those with the next best chance of success are the industry consortia, followed by the independents last."



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BRIEFS

BabyGear.com Closes

Holiday shoppers at the Web site of online retailer BabyGear.com are being greeted by an "out of business" sign. In an announcement posted on the site of New York-based BabyGear, visitors are advised that the company has closed and filed for Chapter 7 bankruptcy liquidation. Calls to the company's offices seeking comment weren't answered.

Oxygen Media Closes Web Sites, Lays Off 65

New York-based Oxygen Media last week announced that it will lay off 44 full-time and 21 part-time staffers, close its Seattle office and pare down its women-oriented Web sites from more than 12 to four. The layoffs represent less than 10% of the staff, according to the company. The layoffs were announced just days after Microsoft Corp. co-founder Paul Allen's investment group, Vulcan Ventures, said it would provide $100 million for Oxygen in its latest round of funding.

Judge Wants to Fine Ford for Online Sales

Ford Motor Co. said it will file by today a response to a recommendation by a Texas administrative law judge that it pay a $1.7 million fine for selling 11 used cars directly to consumers through the Internet in violation of state law. The recommendation by the Texas Department of Transportation judge will go before the Texas Motor Vehicle Board Jan. 18 for action.

Charges Withdrawn Against Kozmo.com

Three months after its discrimination suit against online delivery service Kozmo.com Inc. was dismissed in federal court, a Washington-based civil rights group last week dropped the matter altogether and said the alleged discrimination didn't actually occur.

Kozmo.com and the Equal Rights Center also announced a joint initiative to help increase Internet access in underserved neighborhoods in and around Washington.

Exchange May Cut Ocean Shipping Costs

Venture will facilitate cargo booking, tracking and tracing of shipping containers

BY LINDA ROSENCRANCE

NINE OCEAN carriers are teaming with a California technology start-up to launch an online venture to make the process of shipping containers across the ocean easier and cheaper.

Tentatively named the Global Transportation Network (GTN), the venture will launch early next year.

Details of the arrangement haven't been released.

"This will fundamentally change the process of getting goods around the world," the carriers said in a statement. "Our common objective is to leverage this Internet platform and drive superior customer service and lower transaction costs for both customers and providers."

The shipping companies (see chart) have signed on with Tradiant Inc., a company in Alameda, Calif., that makes software to handle cargo booking, tracking and tracing.

Using the GTN, customers will be able to book freight, prepare documentation, track shipments and check schedules, replacing manual, paper-based processes.

Kevin Higgins, director of global logistics at Wal-Mart Stores Inc. in Bentonville, Ark., said the exchange will help his company "greatly improve operational efficiencies for us and our carriers."

But transportation analyst Donald Broughton at A.G. Edwards & Sons Inc. in St. Louis, said that although the Web may help speed up internal business processes, it does nothing to move freight faster.

"The faster goods are moving, the better," he said. "The slower the goods move, the less value you add to a business. These are ocean carriers — the railroads of the ocean. The value added by Web-enabling [business processes] is not as significant as [finding ways] to move goods faster."

Higgins acknowledged that the GTN won't necessarily move his goods faster. However, he said that's not what he views as the value of the exchange.

"It's about decision-making on the front end," he said.

Other transportation sectors, such as trucking and railroads, have also created Web-based exchanges for a similar purpose.

Ocean Exchange

Carriers involved in the port-to-port GTN:

- **APL,** Oakland, Calif.
- **CP Ships,** London
- **Canadian Pacific Ltd.,** Calgary, Alberta
- **Hanjin Shipping Co.,** Korea
- **K Line,** Japan
- **Mitsui OSK Lines,** Japan
- **Senator Lines,** Germany
- **Yang Ming Line,** Taiwan
- **Zim Israel Navigation Co.,** Israel

Amazon.com's Privacy Policies in Spotlight Again

U.S., U.K. probes urged

BY LINDA ROSENCRANCE

Privacy groups on both sides of the Atlantic are calling on government agencies to investigate Amazon.com Inc.'s U.S. and U.K. operations, alleging that the online retailer violated U.S. trade practices and U.K. data protection laws.

In a letter to the Federal Trade Commission (FTC) last week, the Electronic Privacy Information Center in Washington and Junkbusters Corp. in Green Brook, N.J., asked the agency to determine whether Amazon deceived its U.S. customers by changing its privacy policy to permit disclosure of personal customer information, the groups said.

The two groups charged that Seattle-based Amazon's recently changed privacy policy is inconsistent with its previous policy, which said the company would never disclose customer information to third parties. Therefore, that policy is deceptive and illegal under FTC regulations. An FTC spokesman said the agency would review the request.

Jason Catlett, president of Junkbusters, said Amazon has removed the option that allows customers to send e-mail requesting that the online retailer not share personal customer data with other companies. "If Amazon gets away with this, we are going to have to revise the meaning of the word 'never' in dictionaries," he said.

But Amazon.com spokeswoman Patty Smith said the new privacy policy allows the company to sell customers' personal information only under certain circumstances, such as if Amazon or one of its business units is sold.

"If we sold our bookstore tab, the only customer data we would sell would pertain to the bookstore," she said.

She added that Amazon would give customers the opportunity to have their personal information deleted before it was sold to another company.

Catlett, however, said he has asked Amazon to delete his account and destroy all his personal information. He said Amazon told him it couldn't honor his request because "it is part of our business transaction records."

In Britain, Privacy International, a London-based human rights organization, asked the U.K. Data Protection Commissioner to stop Amazon's U.K. affiliate from processing customer data until the unit complies with the U.K. data protection law. That law stipulates in part that companies must show their U.K. customers all the information about them and to delete it on request.

Barrett Ladd, an analyst at Gomez Advisors Inc. in Lincoln, Mass., said Amazon was almost forced to change its privacy policy. "Amazon has so many [partners] — other online companies that they invest in like Drugstore.com and Greenlight.com, with whom they share customer data back and forth — that they almost have to have that [new] policy because they don't want to get hurt if those affiliates use their customer data," she said.

Smith said the only time Amazon would share customer information with a partner like Drugstore.com would be if that customer chose to complete a transaction with Drugstore.com.

"We may give the customer's address to Drugstore.com to make it easier for Drugstore.com [to ship the goods]," Smith said. "But we would never tell Drugstore.com about your book or CD purchases."

Privacy Patrol

Two U.S. privacy groups are asking the FTC to take action against Amazon.com:

- **To stop Amazon from disclosing customers' information without their consent**
- **To require Amazon to offer its customers the option to delete all information about their identity and purchases**
- **To require Amazon to tell any customer who asks exactly what information it has disclosed or exchanged with other companies**
- **To provide each customer complete access to his customer profile**

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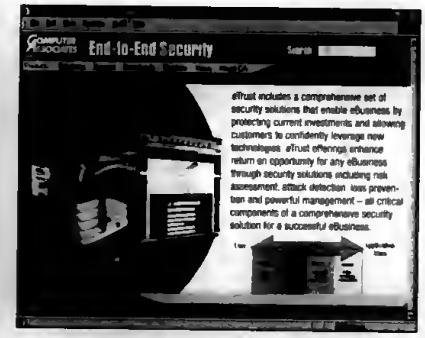
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Is Carnivore Dangerous? Controversy Continues

Researchers claim review of program doesn't go deep enough to say for sure

BY MICHAEL MEEHAN

THE RESEARCHERS who first identified technical issues that they said should be studied regarding the FBI's Carnivore e-mail surveillance system told the U.S. Department of Justice (DOJ) last week that they have "serious concerns" about the controversial technology, despite a generally favorable draft report by the indepeodent team that reviewed it.

The five researchers, from organizations that include AT&T Labs and the University of Pennsylvania, said the review done by the IIT Research Institute (IITRI) in Chicago "appears to represent a good-faith effort at [an] independent review" of the surveillance system. But, they added, the "limited nature of the analysis described in [IITRI's] draft report simply cannot support a conclusion that Carnivore is correct, safe or always consistent with legal limitations."

The researchers recommended that the government release Carnivore's source code for public review to create more public confidence in the software.

Carnivore is a program that monitors packets of data passing through an Internet service provider's network. Officials at the FBI and the DOJ have said the surveillance system can be legally deployed only to monitor alleged criminal activity under a court order, but privacy advocates have said they're worried that the software could lead to widespread and random surveillance of e-mail messages.

The draft of IITRI's report, released three weeks ago, concluded that the software essentially does what it was designed to do: track specific digital communications, under court order. The final report was due last Friday.

But the researchers took particular issue with what they said are vague and changeable audit trails within the Carnivore system. Without a definitive audit trail, they said, it would be impossible to determine who had monitored what.

The researchers also claimed that IITRI didn't spend enough effort investigating "operational and 'systems' issues."

In addition, the report stated, "It is simply oot possible to draw meaningful conclusions about isolated pieces of software without also considering the computing, networking and user environment uoder which they are running."

One of the researchers, Peter Neumann, a principal scientist at Menlo Park, Calif.-based SRI International's Computer Science Laboratory, said Carnivore could be misconfigured to monitor almost anything.

MORE ONLINE For more information about Carnivore, visit our Web site. www.computerworld.com/resources/carnivore

A DOJ spokeswoman said the document prepared by the researchers will be submitted to the U.S. attorney general's office by the end of this month, along with the IITRI's report and all other Carnivore-related submissions.

The suggestioo to release Carnivore's source code is also backed by the Electronic Privacy Informatioo Center (EPIC) in Washington. "If the FBI really wants to provide any type of public assurance as to what Carnivore can and can't do, there is no substitute for releasing that source code," said David Sobel, general counsel at EPIC.

State Department to Punish Six Over Missing Laptop

BY DAN VERTON

The U.S. State Department last week said it is planning disciplinary action against six employees in connection with a laptop computer that was reported missing in January and is believed to have contaioed top-secret information. However, some security and intelligence experts view the handling of the case as heavy-handed.

State Departmeot spokesman Richard Boucher said that at least ooe senior official at the Bureau of Intelligence and Research (INR) could be fired, and the otbers could receive career-halting suspensions or letters of reprimand.

The department also announced that INR Director J. Stapleton Roy, one of the natioo's three most senior foreign-service officers, had resigned from his post. Although Roy was scheduled to retire next month, Boucher denied reports that Roy was leaving earlier to protest the firing of his deputy, Donald Keyser, over the laptop incideot. Keyser is reported to be the senior official facing terminatioo over the incideot, although Boucher wouldn't commeot.

"We're up bere saying that [Secretary of State Madeleine Albright] is concerned about the leadership of this bureau as we go forward and tbat she is making certain decisions about who should lead the bureau through transitioo in order to ensure that it is in solid shape as we go through this turmoil and proceed oo to try to serve a new secretary," said Boucher.

The disappearance of the laptop "was a very serious matter" for tbe department, said Boucher. An investigation revealed that it cootained thousands of pages of top-secret "codeword" information about weapons proliferatioo issues. It disappeared from a conference room at the State Departmeot's headquarters and haso't been recovered.

In response to this and other receot security breaches, Albright ordered a thorough review of security at the department. Sbe also signed off on a training and awareness program that requires each office in the departmeot to assign a staff member to serve as a unit security officer to ensure that security policies are observed.

However, some security and intelligence experts said Albright's response has been heavy-handed.

Stephen Aftergood, an intelligence specialist at the Federation of American Scientists in Washington, called the State Department's actions "heartbreaking" and said that there should be a better way to handle such situations.

"We are running the risk of creating a secure workplace wbere no one wants to work," said Aftergood.

Allen Thomson, a longtime CIA veteran, said, "Feckless officials are seized with the need to look tough, lest they be hauled before Congress and their budgets threatened."

State Security

Other known security lapses at the State Department:

- **Employees failed to escort contractors** who lacked security clearances.
- **A "device" was planted** by a Russian intelligence officer in an undisclosed room (December 1999).
- **Classified documents were removed** from Secretary Albright's outer office by an unknown man who lurked in the halls without being questioned or apprehended.
- **An unclassified laptop** signed out to an Albright aide disappeared.

Shockwave Virus Creates Little Damage

BY JAIKUMAR VIJAYAN

The newly discovered Shockwave virus appears to be doing less damage than originally feared because users may finally be getting better at dealing with such threats, security analysts said last week.

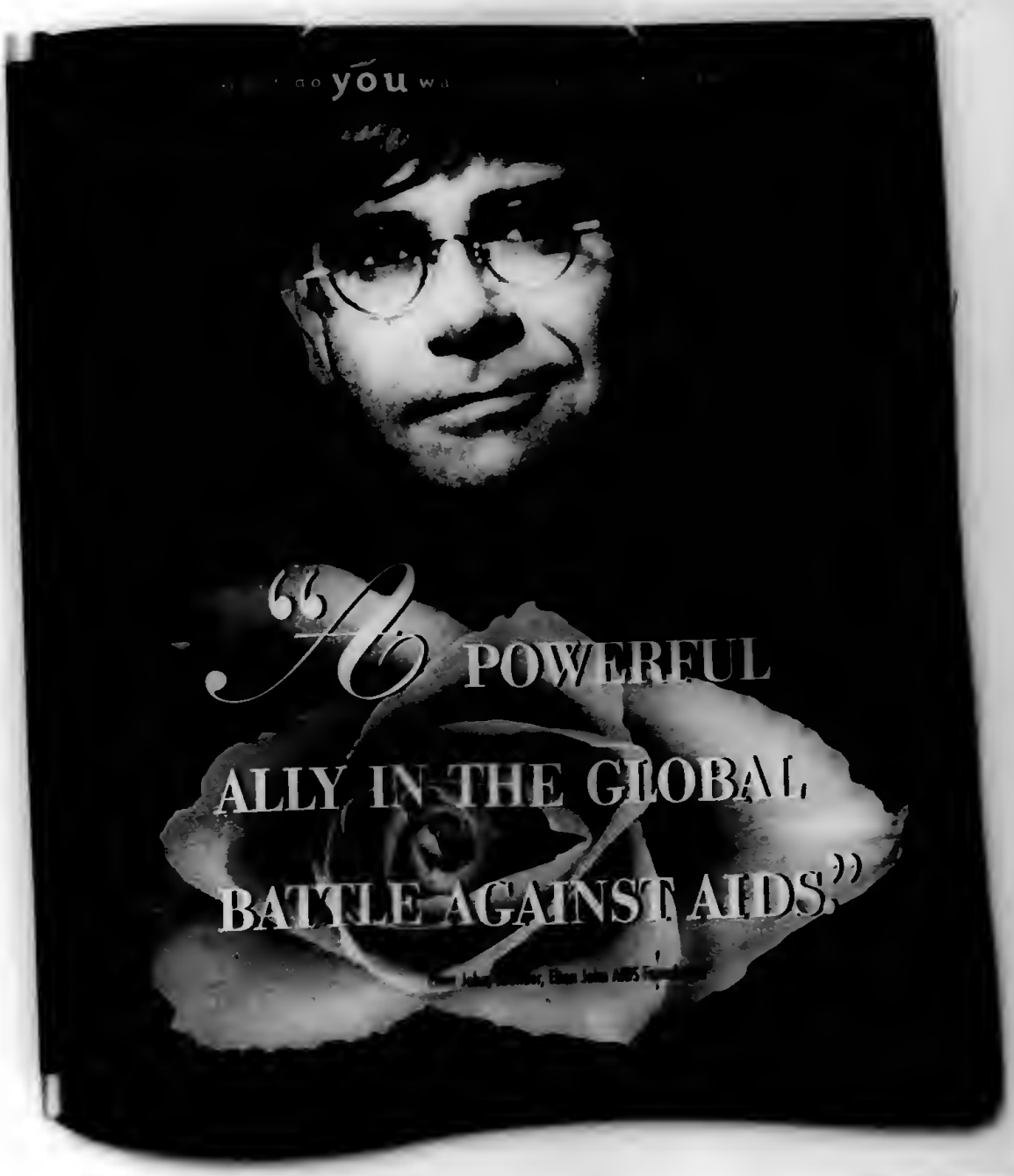
The virus, which disguises itself as a Shockwave file attached to an e-mail message from someone familiar to the recipient, was first reported Nov. 30 by several vendors of antivirus software. The file cootaining tbe virus is named creative.exe, and the e-mail includes the following short message: "Check out this new flash movie that I downloaded just now... It's great. Bye."

When a user double-clicks on the attachment, the virus copies itself onto the victim's system and sends new copies of itself via e-mail to all of the names contained in that persoo's Microsoft Outlook address book. The virus doesn't delete any files but will move and rename some graphics and .zip files, analysts said.

Though security firms were quick to put the virus in tbe high-risk category because of its ability to mass-mail copies of itself, some analysts and antivirus vendors said the damage seemed to be minimal so far.

"We believe tbe worst is already over," said Paul Robertsoo, a senior developer at Internet security services firm TruSecure Corp. in Reston, Va. Though there were several reports of corporations being infected by the virus early on, the situatioo eased considerably as time went on, be said.

"It speaks to the fact that administrators are getting used to dealing with these kinds of threats," Robertsoo said.



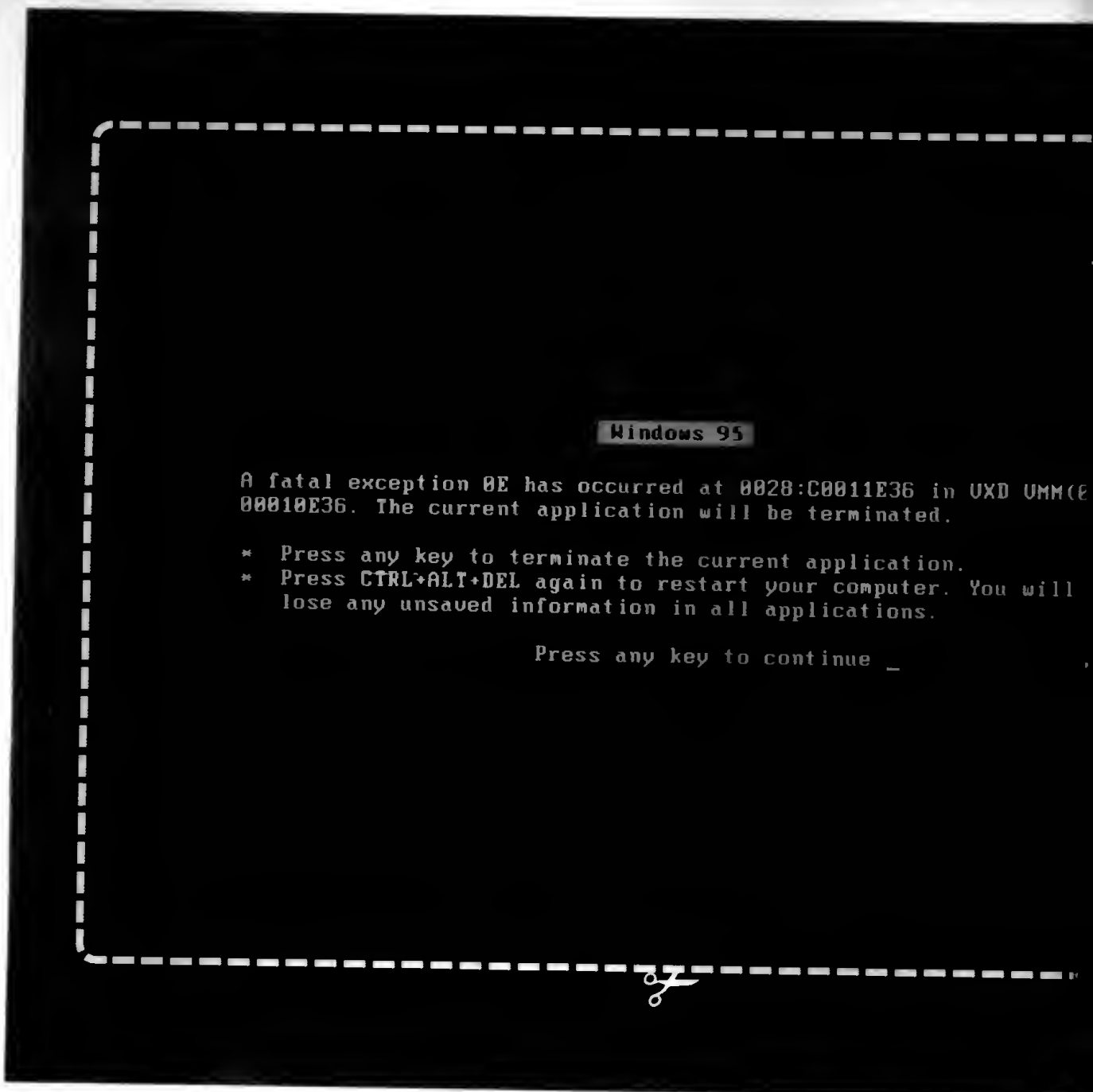
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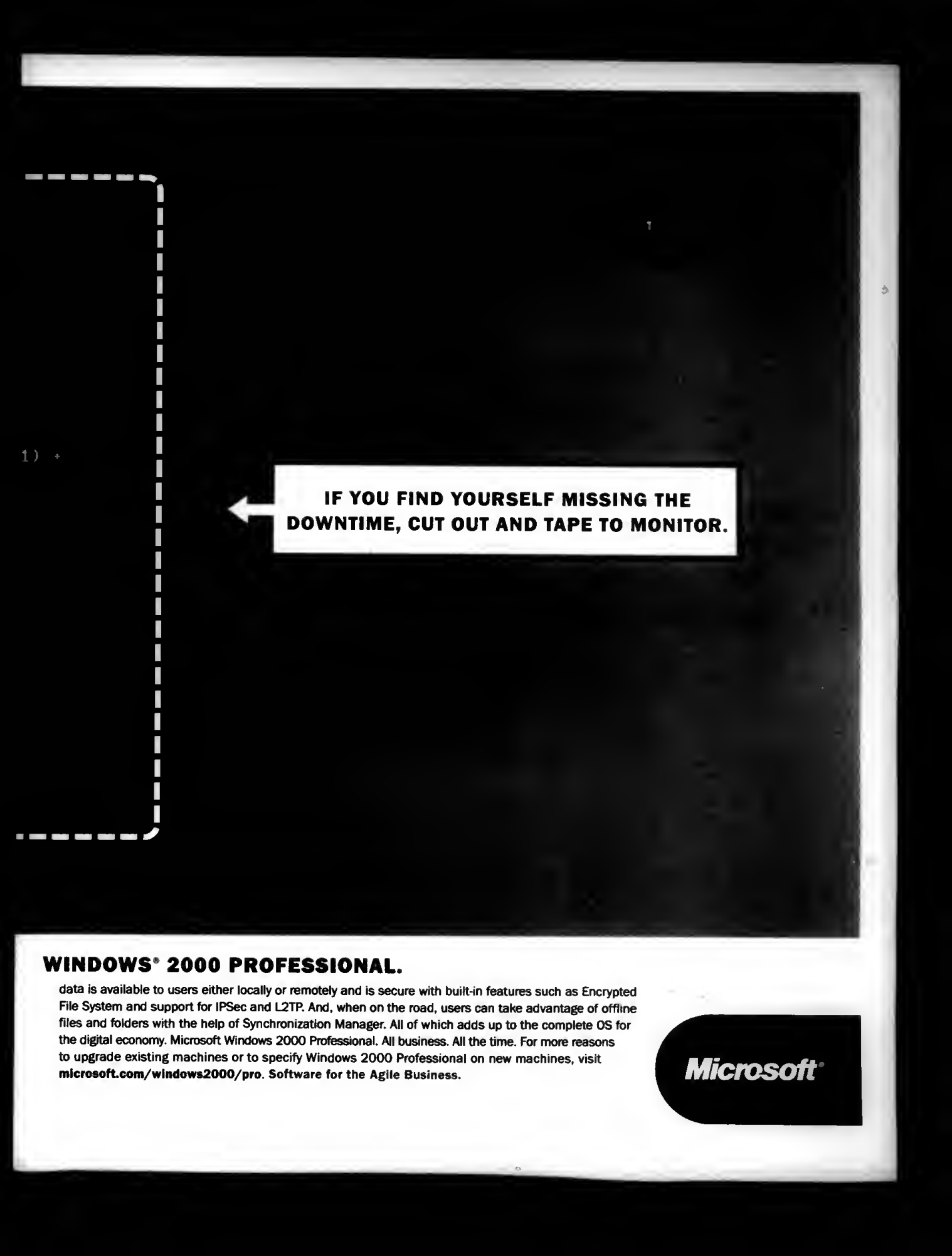


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Financial Chat Software Hits Mass Market

BY JENNIFER DiSABATINO

A Swiss financial firm that developed its own chat service five years ago has made the application available to other companies and has spun off the business into a separate venture.

That venture, Parlano Inc. in Chicago, has been selling its instant messaging and collaborative portal software since early this year. But the MindAlign product has been tested for years inside Swiss finance firm UBS Warburg LLC (UBSW), a business group of Zurich-based UBS AG.

UBSW had internal proprietary chat running on NeXT machines in 1995, said Andy Konchan, director of UBSW's e-commerce business technology group.

Konchan was one of the small group of programmers who developed the SBC chat program and helped advance it into what has become MindAlign.

Using the software brings UBSW about $87 million per year in saved communications costs and additional financial trades made beeause information is disseminated faster, Konchan said. The cost starts at $10,000 for a 100-seat installation.

Parlano was formed this spring through an agreement between UBSW and Divine interVentures Inc., a Chicago-based technology holding company and business-to-business Internet incubator.

About 12,000 employees at UBSW use MindAlign, Konchan said, and 2,000 customers have downloaded the software via the company's Web site to connect with the firm through 600 external channels to the UBSW network.

UBSW is able to send updates of financial market information to corporate customers over what Konchan says is a secure system. The channels are also intended to serve as collaborative, real-time portals, where users can check the latest information as well as work with colleagues.

"I don't know of anybody else that has done that," Robert Mahowald, an analyst at IDC in Framingham, Mass., said of UBSW's system. "They know where they came from and they know the need of the end user."

An IDC study conducted earlier this year predicts that about 70% of large corporations will install instant messaging software during the next 12 months, up from an estimated 6.9% currently using it.

"It really does enter into a beehive mentality," said Dana Gardner, an analyst at Aberdeen Group Inc. in Boston. The "beehive" refers to the buzz in a trading community, where end users constantly keep in touch with the latest news, be said.

As long as Parlano keeps its customers in mind and not just its parent company, Gardner said, the rest of the finance industry should buy into it.



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BRIEFS

3Com Warns of Bigger Q2 Loss

3Com Corp. last week warned that its expected losses for the second quarter of fiscal 2001 will likely be more than twice its original prediction, due primarily to a slowdown in sales to telecommunications carriers. The Santa Clara, Calif.-based networking equipment vendor now expects revenue of about $760 million – about $100 million below the level it predicted in September. Results for the quarter ended Dec. 4 are due to be reported on Dec. 21.

Sun Makes Unexpected Buy of Storage Firm

Sun Microsystems Inc. last week agreed to buy storage software company HighGround Systems Inc. for about $400 million. Sun said the deal should help bolster sales of Sun's storage computers, such as the Sun StorEdge T3. The deal raised a number of eyebrows throughout the storage industry, particularly because of Marlboro, Mass.-based HighGround's relationships with Microsoft Corp., Compaq Computer Corp. and EMC Corp.

PowWow Messaging Service Flames Out

Tribal Voice in Denver said that it will cease to offer its PowWow instant messaging service on Jan. 19, due in part to its inability to crack into the America Online Inc. Instant Messenger member base. Tribal Voice was one of 43 firms that asked the Federal Communications Commission to investigate Dulles, Va.-based AOL's instant messaging policies. HighGround was acquired by CMGIon in Andover, Mass., in October.

Apple Expects First Loss in Three Years

Apple Computer Inc. last week said it will report its first loss in three years due to slower-than-expected sales in October and November. Apple predicts that it will record a net loss, excluding investment gains, of between $225 million and $250 million on revenue of around $1 billion for the quarter closing Dec. 30.

Cisco Gives Analysts View of Big Picture

Seeks to allay Wall Street concerns by revealing approach to business

BY JAMES COPE
SAN JOSE

Cisco Systems Inc., a company that often clouds business and technology initiatives in a veil of linguistic smoke, broke with tradition last week at its annual global analyst conference here in its hometown.

After reassuring the 500 analysts in attendance that there would be no change in guidance, which in Wall Street parlance means that Cisco's revenue and earnings forecasts remain on target, Cisco President and CEO John Chambers and key managers discussed how Cisco crafts its strategies.

Chambers said he wasn't really concerned about Cisco's stock price, which, on the day he spoke to the wary audience, was down $37 from its high of $82 earlier in the year. In fact, negative perceptions fostered by a sagging Nasdaq Stock Market are helping Cisco advance its market share, Chambers said.

Jeremy Duke, an analyst at Synergy Research Group Inc. in Phoenix, said he agrees. "The market is seriously disconnected with what's going on [at Cisco]," he said.

Cisco's revenue was $21.4 billion for the past four quarters through Oct. 28.

Breaking Away

Cisco's marketing strategy, Chambers explained, is to look for "points of inflection, disruption or transition," either in markets or technology where the company can break away from the pack. One of those points, he said, is the transition from separate networks for data and voice to a single network based on IP systems. Such systems, Chambers said, are cheaper and easier to deploy and can offer better functionality than circuit-switched telephone systems.

Mary Sunderland, a portfolio manager at Invista Capital Management in Des Moines, Iowa, said Chambers was more explicit about Cisco's modus operandi than he has been at previous conferences.

"The breaking-away theme with a focus on disruption as opportunity is new for Cisco," she said. "It seems to apply to Cisco's desire to dominate the service provider market."



CISCO CEO John Chambers: Speed is key to strategy.

In the future, Chambers said, large firms will blend services and transports from their own enterprises with those from application service providers, Web hosting companies and telecommunications firms to create seamless intelligent networks.

Chambers said Cisco's approach to execution is based on "sustainable competitive advantages of speed, talent, brand and culture." The speed, he said, comes from practicing internally what the firm preaches to its customers, such as facilitating 80% of its sales through the Web and operating a network that can give managers a snapshot of Cisco's financial state within hours.

Speed applies to integration of new acquisitions, too, Chambers said. "We are now equipped to integrate 10 acquisitions a month if we need to," he said.

But Duke said Cisco still has work to do to compete with service providers such as Nortel Networks Corp. and Lucent Technologies Inc. ◗

Cisco at a Glance

Amid analyst skepticism, Cisco is forecasting 50% revenue growth for next year.

- **Profit of $1.38 billion** for the quarter ended Oct. 28, up **67%** from the same quarter last year
- **Acquired** IPmobile Inc., HyNex Ltd., Komodo Technology Inc., Netiverse Inc. and NuSpeed Inc. for a combined **total of $1.37 billion** in the quarter ended Oct. 28
- **Acquired** Atlantech Technologies Ltd., JetCell Inc., PentaCom Ltd., Qeyton Systems and a subsidiary of Seagull Semiconductor Ltd. in the quarter ended July 29 for a **total of $1.39 billion**

StorageTek CEO Vows Sales Turnaround

BY LUCAS MEARIAN

Executives at struggling storage systems vendor Storage Technology Corp. say it's a leaner, more focused company after six months of internal scrutiny that has included a revamped marketing plan, personnel cuts and the introduction of several products.

But it's Patrick J. Martin, a former Xerox Corp. executive who was appointed chairman, president and CEO of the Louisville, Colo.-based company four months ago, that has analysts confident that StorageTek can rebound from slumping sales.

Martin is "very focused on operation issues," said John McArthur, an analyst at IDC in Framingham, Mass. "He understands [operations costs have] been a drag on StorageTek's earnings. I give him a better-than-average chance at succeeding."

Martin attributed the company's sales slump to poor focus, marketing and overall execution. The company's four-year-plus struggle was capped last year by IBM's decision not to renew a contract to sell StorageTek's disk-array subsystems under the Ramac storage banner. That caused a 20% drop in revenue, Martin said.

The loss of the IBM channel, as well as late product deliveries, pushed down revenue 16% for the first nine months of this year, compared with the same period last year.

Yet StorageTek is back on track after a restructuring this year cut almost 1,300 jobs and added 150 salespeople. The company plans to further increase its direct sales force by 20% in the next three years.



CEO Pat Martin is inspiring analysts' confidence.

With a new marketing plan and products, Martin said, StorageTek will be able to grow revenue by 50% and increase profits by a factor of eight to 10 during the next three years.

Martin said that the company's focus will return to tape automation but that will also focus on virtualization, or multiple storage media, through open storage-area networks (SAN).

And with the introduction of its L20 tape library system in September, plus the T9940 tape drive and the StorageNet 6000 series network manager in October, Martin said, his company is poised to make a comeback.

"We're a storage provider, not just a tape provider," he said. "We're betting on disk, tape and SAN."

Because of its lower cost compared with that of disk storage systems, analysts say, automated tape consolidation is a fertile industry, with double-digit growth predicted for the next several years.

"It is clear that [StorageTek has] positioned themselves to maintain and extend their lead in tape automation," McArthur noted.

Michael Peterson, an analyst at Strategic Research Corp. in Santa Barbara, Calif., said that if StorageTek can execute its plan, it will be back on track.

"The new products map very nicely into extending their base and technology," he said. "The company has . . . fallen back onto [its] core." ◗

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AT&T Business

MARK HALL

Hypernet Future

DAVID TICOLL is sympathetic to CIOs who are only now getting a handle on how to make the Internet work for their companies. But they're about to encounter another phenomenon — one he calls the Hypernet — that could cost them their jobs if they're unprepared for its arrival.

The co-author of *Digital Capital* and CEO of research consultancy Digital 4Sight in Toronto, Ticoll enjoys the chaos of huge technological upheavals. For one thing, it's good for business. For another, he sees these shifts as opportunities for technology leaders to assert themselves on the business side of their enterprises.



MARK HALL is *Computerworld*'s West Coast editor. You can contact him at mark_hall@computerworld.com.

Still, Ticoll isn't one of those wishful thinkers who believes every CIO is destined to become the next CEO. Top IT executives, he says, are best suited to rise in information-driven organizations such as financial services companies. CIOs in, say, the chemical industry are less likely to understand the business side as thoroughly as the engineering or marketing types.

But even in information-focused companies, CIOs need to be ready for what Ticoll predicts will be top-down demand for the Hypernet, which will be built on peer-to-peer, mobile, broadband and utterly pervasive applications. Senior executives are going to put heavy pressure on IT to deliver a broad swath of services with lightning speed.

Until very recently, IT managers could claim some exclusivity in understanding technology deployment's potential. After all, they used the systems that delivered informatioo. Today, everyone uses them. Old-line executives, now retiring in droves, depended on otbers to handle the tools that delivered decision-making information.

The new breed of CEOs has grown up with PCs, pagers, Internet-ready cell pbones aod much more. Once they begin to see competitive advantage in rolling out Hypernet services, they will demand them. In Ticoll's view, these CEOs will make demands before the CIO is ready to eveo discuss them, let alone offer up a plan. That sounds like a loud wake-up call for every top technologist, doeso't it?

The key to understanding the Hypernet is recognizing that IT will be embedded directly in products, not just tagging along with the ancillary operations such as the supply chain and distributioo logistics. Building — or at least paving the way for — this IT environment will go a long way toward keeping your company on the cutting edge. It could also go the distance to keep you out of the unemployment line. ◗



PIMM FOX

Marketing and IT Meet in the 21st Century

MARKETING AND IT departments are separated by vast amounts of beige carpet and different mind-sets. Successful companies will change this relationship, and IT managers should be leading the charge.

At a recent conference, "Identity: Brand Excellence in the Internet Economy," in San Francisco, it was obvious that there were simply not enough good ideas from the podium for these marketing experts to get excited about. But the importance of a brand to a company's overall value was reinforced by Peter Sealey, co-director of the Ceoter for Marketing and Technology at the University of California, Berkeley's Hass School of Business. Sealey explained how the one-to-one branding relationships of 100 years ago had evolved through such media as radio and television to become one-to-many. But, be said, technology is making it possible for companies to have one-to-one relationships again.



PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

Afterward, be told me that "technology gives people access to choice and to a variety of information." These qualities are challenging the current one-to-many relationships between a producer and a consumer. IT leaders need to know how a technology is changing the way a company communicates with its customers, suppliers and business partners.

In several examples, it's become apparent that IT is just beginning to see its influence and effect.

For example, technology is transforming the marketing of personal transportation. "By sending an e-mail, Ford or another automobile company could let you know that you need new tires, or perhaps you need to check your automobile insurance. That's a one-to-one marketing connection that only technology lets you have," he said.

Customers, whether they're businesses or individual consumers, require a level of service only technology-aware businesses can deliver.

Sealey envisions a world in which a maker of refrigerators, for instance, monitors the performance of one of its machines and dispatcbes a repairman before it becomes a major problem. "Isn't that tbe kind of relationship you want from a supplier?" he asks.

Small, inexpensive chips planted on prodocts we buy will change the way companies connect with us. And IT managers will be responsible for maintaining this new technology.

"Companies such as Coca-Cola will be able to monitor the inventory level of their products using intelligent chips, meaning you'll never run out," Sealey adds.

Most of these ideas will be implemented using existing IT resources.

Your departments are going to have to handle more complex assignments, greater visibility and more responsibility. How do you do it? Who do you convince that IT people need ongoing educatioo in things such as hrand value as well as technical training?

"The era when you could get your education all at once" is over, Sealey says. "Continuing educatioo is essential to the maintenance of an organization, especially in IT." CEOs need to know that courses in database mining and operating systems are essential to shareholder value, he adds. "How else are you going to keep those IT managers from leaving?" ◗

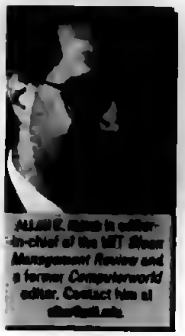
ALLAN E. ALTER

A Sign of Doom: Failing to Listen To Customers

DO ENTREPRENEURS and venture capitalists get it? That there's more to starting a technology business than an idea and someone else's money? That you actually have to understand and serve customers?

The venture capitalists, it would appear, are getting the message. As for the entrepreneurs, I wouldn't bet the ranch that they have.

On Dec. 2, I attended a conference sponsored by MIT's venture capital club. I'm told it lacked the exuberance of previous years. Too much mooey has been lost and too many dot-com start-ups have folded for anyone there to feel irrationally exuberant. Nevertheless, the hallways were crowded with the 40 venture capital partners and hundreds of students and alumni who had turned out on a Saturday morning to speak, listen, recruit and network. Many of them attended a session on issues for newly funded companies.



ALLAN E. ALTER is editor-in-chief of the MIT Sloan Management Review and a former Computerworld editor. Contact him at allan@alter.info.

The moderator put the first question to the three panelists, all general partners with venture capital firms that invest in technology start-ups: What are your key considerations when you decide whether to invest in a new company? I expected to hear them talk primarily about the management team; instead, they mostly talked about customers. Is the new company offering a product that they're sure customers will buy? Have the entrepreneurs identified a problem worth solving? Do they understand the would-be customers' pain?

And in this age of dot-com disillusionment, just how do they validate a business model? By talking to many entrepreneurs, in order to get a feel for how well they understand the customers, said Duncan McCallum, a partner at OneLiberty Ventures in Cambridge, Mass. Part of the formula for getting results, he said, is to "pick the right entrepreneurs and surround them with customers." What about operations? Start-ups focus so much oo marketing that they're blind to operations issues, said George Zachary, a partner at Mohr, Davidow Ventures in Menlo Park, Calif. "We hit them on that."

OK, I woodered, but if they're so serious about customers, do they actually involve CIOs or other high-ranking executives at these companies? I waited until the end of the Q&A session, after giving the future entrepreneurs in the room a chance to ask their questions, to pose mine. All three panelists talked about the customer advisory boards they set up to counsel them and the entrepreneurs they've invested with. These boards are critical, they all said, to identify those pain points and understand whether a product makes sense. "The worst problem for us is building a product that no one wants to buy," said Charles Lax, a partner at Softbank Capital Partners in Newton, Mass. Do CIOs participate? Yes, they do. Lax named two who work with his firm: Robert Walters at John Hancock Mutual Life Insurance and Charlie Feld, the famous former CIO of Frito-Lay and Delta Airlines.

I wish I could say I left the conference feeling that these smart, energetic entrepreneurs heard the clear message about customers, but I can't. For not once during that sessioo — or any of the six sessions I attended — did I hear any questions about customers or see any sign that they got it. Could that be why so many IT managers wind up so disappointed when they buy products from emerging companies? And a reason why so many high-tech entrepreneurs fail? ◗

READERS' LETTERS

Linux and Clusters

MARK HALL'S story ["Linux: Ready for Prime Time?" Technology, Nov. 13] contained inaccuracies, half-truths and just plain old FUD. He maintains that the new kernel can handle eight-way systems, which is "well behind Unix and Windows 2000." However, there are Linux supercomputing clusters of hundreds of processors.

He also claims that Linux is "barely entry-level" for the enterprise, but a quick check of the results so far in the spec99 Web benchmarks shows that Linux dominates the high end. Linux has the best one-, two-, four- and eight-way results overall.

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History Repeats

IN THE MID-1960s, many users abstained from using time-shared services, which, in effect, offered the same services as the storage service providers (SSP) of today ["Storage Rental Companies Still Look for Credibility With Large Users," *Computerworld.com*, Nov. 27]. People won't trust their critical data to outside depositories. By 1970, the time-share movement was dead. I wouldn't be at all surprised to see the same thing take place in the near future with SSPs. History has a way of repeating itself.

Paul D. Lane
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Certifiable Experience

DEBORAH Radcliff's "Sizing Up Security Services" [Technology, Nov. 27] was nice, but I wish she had left out the part about certifications. Employers are putting more and more weight on certification. Soon, I'll have to get a CISSP just because people will start to ask for it and assume (even with 23 years of experience) that I'm no good since I don't have it.

Gregory A. Gilliss
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Rethink the GUI

MUCH OF what Linux Business Expo Conference keynoter Miguel de Icaza had to say is very true ["Interface Problems Hold Back Linux, Users Say," *Computerworld.com*, Nov. 15]. And yet Linux and Gnome have a chance to do an end run around Windows. Computing power and technologies such as speech recognition and context-sensitive agents have expanded significantly enough since the GUI paradigm was invented that we can now deploy a more attractive user interface. Defining this interface and the APIs is a natural role for Gnome.

Peter F. Hollings
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Civics Lesson

YOU RAN a fine article ["Voter Systems in Disarray Across U.S.," Page One, Nov. 13], but I take exception to the statement, "The federal government grants each state control over its own voter registration systems."

The federal government was never given the right to manage voting. That right belonged to the states before the federal government was formed and is not one of the functions the states relinquished for the common good when our republic was formed. The federal government could not have granted what it never had.

Tom Clark
Manassas, Va

Always Coca-Cola

MY QUESTION about the story "Coca-Cola Adds Location-based Mobile Commerce" [*Computerworld.com*, Dec. 4] is, Why?

My guess is that 95% of the U.S. population is within three minutes of a retail facility that sells Coke. And I bet 95% of U.S. Coke drinkers know where they can get one, even when they're traveling. Why do I want a gadget to tell me something I can find out faster on my own?

Bill Pribyl
Houston

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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DAVID FOOTE

Staffing Problems? Learn From the Nanny Dilemma

JEFF AND DAN, both successful IT managers at their companies, are having nanny troubles at home. Employment-related troubles, that is. Even though each claims that it's hard to find a good nanny, availability isn't really the issue. If English language skills aren't required, the pool is even larger.



David Foote is managing partner and research director at Foote Partners LLC, an IT compensation and workforce research firm in New Canaan, Conn. Contact him at [redacted]

The dilemma for these first-time fathers (their real names aren't used) boils down to whether to hire Americans or foreigners for the jobs. It's a difficult choice, and the managers couldn't be further apart in their views. It reminds me a lot of the IT staffing "crisis" and the debate about the recently expanded H-1B visa program that allows foreigners to work in the U.S. temporarily.

Jeff says that Americans, many of whom are in their 40s and 50s, are among the most experienced nanny candidates. They tend to be set in their ways, are somewhat demanding and are certainly the most expensive. Jeff lives in an affluent New England suburb and expects to pay a premium for housing and basic services, including child care. American nannies in his community often ask for and receive health insurance, income tax subsidies, attractive living arrangements and even perks like automobiles and clothing. As a group, they're very particular about what services they won't perform, but they do the important things well and don't require a long adjustment period. Nearly all have had children of their own, so they know how to raise kids in our culture. Jeff and his wife are strongly leaning in this direction.

Dan and his wife are more inclined to consider foreign nannies, who are rapidly becoming the more popular choice in his area. He says these candidates are often several years — even decades — younger than their U.S. counterparts. They're willing to work for considerably less — 25% to 40% — depending on English proficiency and visa status, and without many special demands. What foreign nannies might lack in overall experience or familiarity with U.S. culture, they often make up for by being extremely hard-working, trainable and eager to please. For example, they might have no problem working longer days or performing housekeeping chores that many American nannies would shun, like heavy cleaning.

Foreign nannies will generally rely on their host families to handle immigration matters and assume their associated legal expenses. Still, these additional financial burdens are negligible compared with the price of American nannies. Even better, foreign nannies feeling visa pressures are more loyal and reluctant to change hosts or do things to risk losing their residency status.

As with nannies, there are plenty of IT workers, despite the hype about the so-called IT labor shortage. Veteran U.S. IT workers may not always come at the right price or with the perfect skills. But make no mistake about their abundance, invaluable experience and — with good management — adaptability to modern IT.

Sure, the situation's more complex than I'm letting on. But it's a simple truth that as maturing American IT workers complain about their unemployability, the bidding wars for younger workers rage on, and cheaper foreign software programmers with H-1B visas are increasingly taking jobs away from qualified Americans.

And I'd take an even bet on guessing Jeff and Dan's IT staffing philosophies. ◗

THORNTON MAY

In Today's Economy, Talk Isn't Cheap

WORK IN THE NEW millennium is all about conversation. Conversations are little-analyzed and very poorly understood litmus tests for organizational greatness and executive prowess. They provide a much-needed shared space to discuss problems, deliberate options for moving forward and influence or modify behaviors.



Thornton May is corporate futurist and chief awareness officer at Guardent Inc. in Waltham, Mass. Contact him at [redacted]

Conversations and conversational ability are things that should be measured and managed. Organizations that are good at conversations — that is, involving the right people and talking about the right things, at the right time and in the right format — outperform similarly positioned but conversationally challenged enterprises.

Executives who are adroit at sparking great conversation on supremely relevant topics add enormous value to the enterprise. So it's time we debunked the long-held stereotypes of IT leaders as socially maladjusted, tongue-tied candidates for Toastmasters. Good CIOs are good conversationalists. Great CIOs aren't just capable of participating in conversations; they are masters at creating the right kinds of conversations

A few simple questions will keep IT leaders on a high-value conversational path.

■ **Who's involved in the conversation?** This first dimension of conversation has perhaps seen the greatest change over time for IT leaders. In the early days of computing, IT leaders were treated like children. Their CFO handlers told them to speak only when spoken to. IT leaders were brought into "adult" enclaves for limited periods of time to perform set and programmatic ritualistic technology tricks. IT leaders spoke to IT practitioners or the machines that they so lovingly tended, using inanimate objects such as punch cards and disk drives.

The first questions that must be answered: Are the right people in the room? Do we have all the relevant subject matter areas covered? Are the people who will be affected by the decisions that are being contemplated involved in making them? Are free-thinking "wild ducks" available to provide some "innovative lift" to what otherwise could devolve into boring, tactical deliberations?

■ **What are we discussing?** Not all conversations are created equal. Communicating a list of tasks that must be completed is very different from engaging a room full of Mensa geniuses on future directions to be taken. The greatest job complaint of many CIOs I talk with is that they're too busy putting out fires to become involved in strategic conversations. So the tactical will always drive out the strategic. Conversation topic No. 1 is: Are the conversations we're having strategic enough?

Over the past four months, working with 100 organizations and more than 600 information management professionals, researchers at Guardent's Futures Lab determined that top "high-value IT-related" conversations focused on the following:

a. Retaining high-performing staffers.

b. Assessing the security of extended enterprise infrastructures.

c. Establishing the structure and governance of the postmillennial, Internet-sensitized IT organization.

Such topics can be discussed strategically or tactically. In the survey, CIOs were unanimous in pointing out that spending and budgeting discussions tend to be low-value time sinkholes.

■ **How is the conversation structured?** Like it or not, good conversation requires a bit of staging; it has a theatrical element. When a television director once suggested to Harry Truman that his tie was inappropriate for television, the president harked back, "Does it really matter?" When informed that it did, the former haberdasher from the heartland commented, "If... I'm talking about Korea, and people are asking each other about my necktie, it seems to me we're in a great deal of trouble."

Truman and the director were both right. CIOs must have a bit of both style and comprehensible substance. People have to believe the mouth that the words are coming out of. ◗

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BUSINESS

ONLINE LINKS

A growing number of online marketplaces are starting to address the dirty little secret of B2B e-commerce — the lack of integration with users — with electronic ties to users' enterprise systems and third-party services. ▸ 40

JUST FOR KICKS

OK, so e-commerce isn't the pot of gold at the end of tbe rainbow that we thought it might be. But there are still plenty of sites that are valuable, if only for their freakish ability to shock and delight, writes Kevin Fogarty. After all, who can resist a spinning 3-D monkey brain? ▸ 40

ONLINE INQUIRY

The Justice Department confirmed that its antitrust division is investigating the online bond trading and online foreign excbange industries, sparking questions about the goal of the probe. ▸ 42

SANTA'S ELVES

What's it like to work in IT at Mattel during the holiday season? You don't want to know. No vacations in December, 12- to 14-hour days, weekend shifts. "People pull together to make sure we get everything out to consumers," says CIO Joe Eckroth. But, be adds, the IT elves are rewarded. ▸ 43

CULTURE CLUB

At Minnesota Life Insurance, culture counts. In fact, the company credits its 90% retention rate to the warm, friendly atmosphere it works hard to foster with such features as company-sponsored marathons and paintathons, midday "chat breaks" and "decompression sessions," and sports leagues. ▸ 52

REACHING OUT?

While some Silicon Valley firms are reaching out to minority job candidates, critics charge that most are too passive about diversifying their ranks. ▸ 56

AT YOUR SERVICE

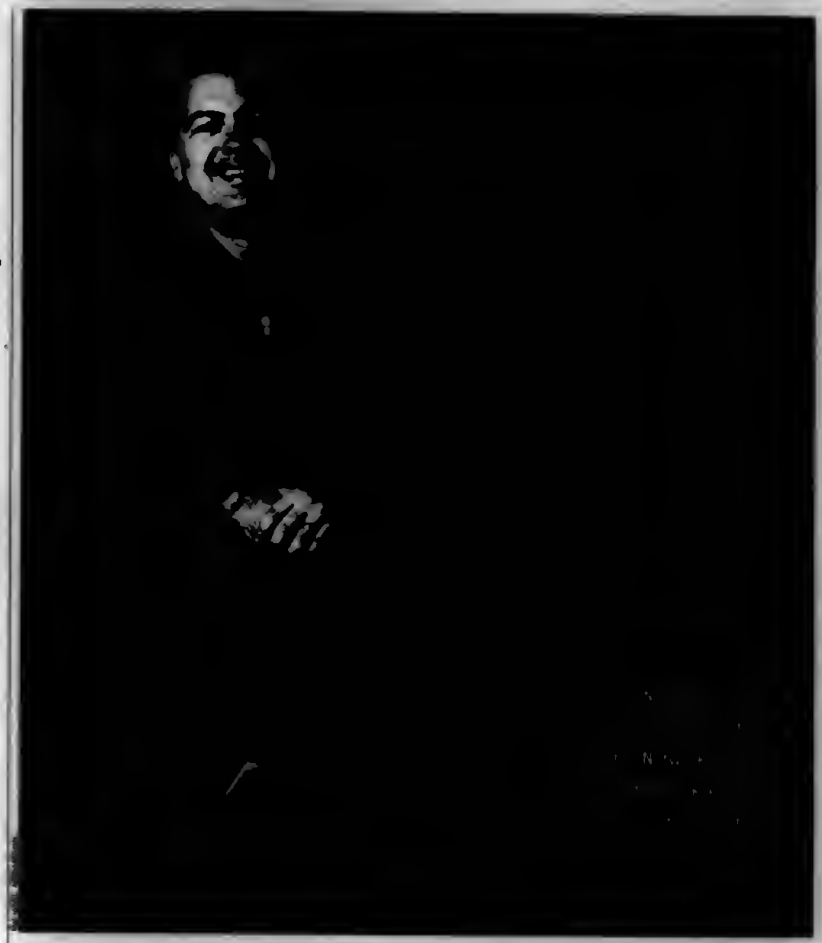
The customer is always right. It's a concept that few would dispute, but moving customer relationship management (CRM) online is a challenge many firms are struggling with. *Computerworld*'s Thomas Hoffman and *ebizChronicle.com*'s Sarwar Kashmeri recently led a panel discussion about the challenges of electronic CRM. ▸ 56

TIME FOR A BREATHER

Sabbaticals aren't just for academics anymore. More Fortune 500 companies are adding sabbaticals to tbeir benefits packages to belp recruit and retain staff. In an interview witb *Computerworld*'s Melissa Solomon, Michelle Swenson, senior vice president at Charles Scbwab, talks about the company's newly expanded sabbatical program. ▸ 62

MORE

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PERSONALIZATION — AT A PRICE

YOU'RE DRIVING ALONG the highway and suffer a heart attack. You pull over to the side of the road and dial 911, but find yourself unable to speak. Thanks to the location information from your cell phone, rescuers are able to find you. Great. But are you ready for your location to be broadcast to every marketer that crosses your path? Are your customers?

46

E-Marketplaces Undo Dirty Little Secret

Exchanges link to users' systems

BY JULIA KING

A growing number of Internet business-to-business marketplaces are starting to deliver on the promise of greater trading efficiencies by furnishing electronic tie-ins to users' enterprise computing systems. They're even providing online links to shipping, logistics, credit and other third-party services.

"The dirty little secret about the lack of integration is starting to change," said Nancy Tubb, an analyst at The Delphi Group in Boston.

"We are also seeing more and more where exchanges are providing the kind of backbone that lets companies automate their supply chains," Tubb said. "If Company A is buying from Company B on a regular basis, they can automate their purchase orders, for example, using an exchange's processes. Rather than [individually] integrating ERP system to ERP system, everything funnels through the exchange."

This should come as good news to a majority of large user companies, which plan to tap into multiple electronic marketplaces, according to a recent survey of 50 Global 2000 companies conducted by Forrester Research Inc. in Cambridge, Mass.

'Overcoming' the Secret

More than half of the companies Forrester interviewed said they expect to join between two and four marketplaces but that, up until now, one of the big sticking points has been a lack of integration capabilities.

"We have been working with customers since the second quarter of this year to overcome that dirty little secret," said Bob Prochnow, chief technology officer at Austin, Texas-based SiteStuff, an online exchange serving buyers and sellers in the commercial real estate market.

The exchange has developed a set of electronic interfaces to automatically link back to any one of 16 different property management and accounting systems — many of which lack e-commerce functionality — that are being used by managers of large apartment buildings and other commercial properties.

The managers place their orders with SiteStuff using a Web browser, which works to digitize what was previously a manual, paper-driven process. From there, the order is filled over the exchange, with inventory and accounting data fed directly back to users' computing systems. The result: a per-order cost decrease ranging from $33 to $55, according to a Deloitte Consulting study commissioned by SiteStuff. The company is considering charging users transactions fees, which would decrease the savings somewhat.

More Evidence

Another indication of this new shift in electronic marketplaces is the growth in sales of application integration software and middleware technologies to the online exchanges, according to Samir Gulati, vice president of marketing at Reston, Va.-based Saga Software Inc., whose users include RedMeteor.com, an online energy marketplace that uses Saga's technology to create electronic ties to its users' back-end computing systems.



BOB PROCHNOW: SiteStuff is "outsourced partner."

"My own opinion is that all of the larger [marketplace] players will provide integration services themselves [rather than force users to implement individual electronic links from the exchanges]," Gulati added. "We're already seeing the largest players, such as Ariba, doing that now."

But in a September report, Forrester analyst Simon Yates cautioned users against implementing such ties. Not only are they expensive, but there is also no guarantee that the marketplaces users tie into will still be in business one or two years down the road.

"Sketchy business models, the inability to build liquidity and the growing dominance of industry consortia will drive most e-marketplaces into the ground," Yates said in his report. ◗

KEVIN FOGARTY/BRICKS AND CLICKS

Worthy, but Weird

IS THE WEB'S MAGIC GONE? You'd think so, reading *Computerworld*'s coverage of Web retailing and e-commerce. The FTC is threatening online retailers who don't live up to their promises to consumers. Investors are pushing them to turn profits. Dot-coms are going belly-up. Instead of fun and excitement, everybody's talking about real-time inventory systems and B2B standards-setting consortia and who will be the next to go. A scrooge-like soullessness seems to permeate the click world.

But e-commerce wasn't what drew us to the Web in the first place, was it? Remember FishCams? And the Hamster Dance? And all the other idiotic things that made the Web an interesting place?



KEVIN FOGARTY is *Computerworld*'s features editor. Contact him at kevin_fogarty@computerworld.com.

They're still there, despite the capitalistic fervor around them, like street performers on Wall Street.

The cranks, for example, assemble at The Crank Menagerie (*www.lns.cornell.edu/~riehle/crank.html*). It has geeks; wild, unsupported rumors; bad science; energetic arguments on crackpot theories; new (and unsupported) models of the cosmos; holistic mathematics — everything you'd want from pseudoscience.

On the real-science front, you can check out the spinning 3-D monkey brain at *www.loni.ucla.edu/data/monkey/movies.html*. Sure, there's a lot of Latin, but there's enough of an oh-my-God effect to make it worthwhile.

Just as good, but way weirder: Sumo wrestlers dressed as Sailor Moon characters at *www.os.xaxon.ne.jp/~rini/sailor/sumo/index.htm*.

(Thanks for the above, by the way, to Net pioneer and Web gadfly Adam Gaffin at *Network World*, who performs a public service by reminding his more dour colleagues of the weirdness around them.)

Admit it: Not all the news you want to read online has to do with your job or your stocks.

Weird news at Fark (*www.fark.com*) includes Mike the Headless Chicken, the Longest Cat in the World, the Infamous Exploding Whale and other items from sources legitimate and . . . otherwise.

You have to love the categories: Sad, Weird, Interesting, Amusing, Scary, Strange, Spiffy, Silly.

OK, one useful one: Salary.com (*www.salary.com/home/layoutscripts/sall_home.asp*). How much are you worth? Salaries divided by specialty and geography, using information taken from visitors to the site. Lots of IT salary data.

Hungry? Try *www.toquitos.net*, a great illustration of how ordinary people can turn an unhealthy obsession with odd-flavored chips (Humpty Dumpty Sour Cream & Clam Artificially Flavored Ripple Chips? Walkers Pickled Onion Monster Munch? Cuttlefish Flavored Snack?) into a classic Web oddity.

OK, here's one more useful one: *www.dack.com/web*, which includes serious thoughts on Web shopping carts as well as a not-so-serious BS generator to help you blather about strategizing B2C content, meshing real-time technologies, architecting sticky functionalities and integrating compelling schemas with the best of them.

Fly a lot? Ever worry about that turbulence or the little fishtail just before you land? At *www.airdisaster.com*, black-box recordings, "latest crash" updates and other news will feed your "airanoia" as you wait for the front wheels to thump down.

Then there are just those whacked-out sites put up by people who clearly don't have enough to do but like to poke fun at things that scare the bejesus out of other people.

This is the treatise of the Beaver County Militia, for example (*www.members.tripod.com/~sonoguy*). Describing itself as a "militia for those who are militant about being nonviolent," the Beaver County Militia opposes blue-haired elderly ladies and raises the alarm about a world domination conspiracy by the Amish involving satellites and dwarf spies hidden inside cattle.

The Web: built for more than just e-commerce. ◗



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Online Bond and Foreign Exchange Industries Probed

DOJ looks into joint ventures

BY MARIA TROMBLY

THE U.S. Department of Justice (DOJ) last week confirmed that it's investigating the online bond trading and online foreign exchange industries.

"The antitrust division is looking at the competitive effects of certain joint ventures," said DOJ spokeswoman Gina Talamona.

Officials in the brokerage industry earlier this month reported that some financial services firms had received letters from the DOJ asking for information about their online bond trading plans. Merrill Lynch & Co. and New York-based BondBook LLC, which is one of three major online bond trading exchanges set up with the backing of various brokerages, both said they had been contacted by the DOJ.

"We intend to fully comply with the inquiry," said Joseph Cohen, a spokesman at New York-based Merrill Lynch, which is a backer of BondBook.

According to BondBook spokesman Steve Van Anden, the government's letter sought a range of information about the bond exchange's business model and organizational structure. "It was very broad in scope," he said.

But it remains unclear how widespread the investigation will be. The DOJ wouldn't provide any specific details into either investigation.

Like Merrill Lynch, major New York-based brokerages such as The Goldman Sachs Group Inc., Morgan Stanley Dean Witter & Co. and Citigroup Inc. subsidiary Salomon Smith Barney Holdings Inc. are backing the various bond trading systems developed by BondBook and its rivals.

Analysts said they aren't sure exactly what the DOJ hopes to accomplish with the investigation.

"It seems to me that it's late in the game for the Justice Department to discover that the bond market is a collusive environment," said Deborah Williams, an analyst at Meridien Research Inc. in Newton, Mass. "It's dominated by a very few key specialists."

In fact, Williams said, the emerging online markets may actually be more open than the traditional ways of doing business. "From our research, there's potential . . . for some of the new systems to really open up the bond market," she said, adding that greater price transparency could be one of the positive benefits.

There haven't been any signs that the operators of online bond exchanges have been taking unfair advantage of new online marketplaces, said Larry Tabb, an analyst at TowerGroup in Needham, Mass.

However, he added, there's a worst-case scenario in which bond dealers create a stranglehold on the market and then use it to shut out their competitors and collude on prices. That could help them artificially widen spreads on the trading of bonds, which Tabb said would put more money in dealers' pockets and leave less for individual investors. ▶

Melissa Solomon contributed to this report.

SOUND BYTES

Toysmart CIO Comes Full Circle

JOHN PUCKETT, 55, was a top technology executive at GTE Internetworking in Cambridge, Mass., when he made the dot-com leap to join Toysmart.com as CIO in June of last year.

He had been at Waltham, Mass.-based Toysmart for a year when Burbank, Calif.-based The Walt Disney Co., which owned 60% of the online toy seller, pulled the plug on it in May.

After Toysmart was shut down, Puckett said he wanted to take a vacation. Instead, he accepted an offer from Polaroid Corp., also in Cambridge, to head a new and still hush-hush business unit focused on the convergence of wireless and Internet technologies.

Computerworld's Julia King asked Puckett about his experiences bouncing from corporate America to dot-com land, then back to corporate America.



PUCKETT: Going to a dot-com is a different world.

What's the biggest difference between working as a CIO at a large corporation and working as a CIO at a dot-com? Going from a corporate field to a dot-com requires a lot of courage. Corporations have a lot of policies and procedures that are protections which cover the backsides of people in organizations. In many instances, the responsibilities and decisions of any one person in a corporation don't impact the lifeblood of whether a company stays in business in the short term.

Going to a dot-com is a whole different world, with a faster pace where decisions depend on you. You make decisions often based on gut feel. That's because your time-to-market speed and agility [are] crucial to your success.

What was your greatest lesson from Toysmart.com? I learned you can make good decisions based on less information. Empowering other people to make decisions quickly works. People [at a dot-com] are committed to a common goal of survival of a company. You have a much better understanding of cash flow and the economics of how the business works.

You also understand where the weaknesses are. I think out of that experience you become a much more valuable person to industry at large. I learned more in one year at a dot-com than I had in the previous six years in corporate America. It was painful, exhilarating and an incredible learning experience. And I'd do it all over again, even though it was painful at times.

In the end, Toysmart.com failed. How did that affect your career status? Did it make you less valuable in the CIO job market? I got 168 job opportunities after I left Toysmart. I couldn't return all of the calls, and I'm a person who returns calls. My kids, my wife, my entire family were becoming secretaries. I could have used a presidential staff to explore all of the opportunities. It was encouraging and flattering to be so much in demand. ▶



WORKSTYLES

What It's Like to Work at . . . Mattel Inc.

Interviewee: Joe Eckroth, CIO
Company: Mattel Inc.
Main location: El Segundo, Calif.
Number of IT employees: 500 worldwide, about half are in El Segundo
Number of employees (end users): 30,000 worldwide
What impact does the holiday season have on IT in a toy company? "This is the heaviest season for our company. It's a huge infrastructure load because we take a huge quantity of orders from retailers, distributors and consumers [via call centers, the Web and electronic data interchange]. It's critical that there are no gaps in service. Orders continue to come in through Christmas, and then we have the postholiday returns. So mission-critical systems now are anything that touches the customer, from order entry to warehouse management to shipping and tracking packages.

"The IT organization becomes much more seamless in terms of supporting whatever it takes to handle the peak demand. We integrate very tightly with the business, and it's hard to pick out an IT person from employees in our call centers, distribution centers, etc., because people pull together to make sure we get everything out to consumers."
What residual benefits does that have? "Our IT people become fluent in what we do, and down the line, it makes them much more intelligent on how to enhance this process in upcoming seasons; it makes them more customer-centric; and it educates them about dealing with the end consumer."
What are the hours like for IT now? "We're covering hours we wouldn't normally cover, like weekends and the day after Thanksgiving. It's not unusual to find our programmers who support order-management systems working a 12-to-14-hour day. We have a no-vacation policy in December, and while we have half-days on Fridays all year round, [IT employees are less likely to leave early on Fridays] during peak season."
What are the rewards?: "If you didn't take all of your vacation time by December, you get paid for it by the end of the year. We have less coverage the week between Christmas and New Year's and encourage employees to spend time with family and friends."
Training plans: "A lot more technical training. More Web development and a total enterprise-level data warehouse are on the horizon for next year. We want to deliver the information via personalized portals. So we'll do training around some of the database and delivery tools."
Career path options: "We have formal career paths for all employees. I'm beefing up our technical career paths, so if you want to stay technical, you can achieve the same level of responsibility and compensation as if you were in more of a business [track]. We're putting in place a leadership training program [to bring] a leadership focus to all IT disciplines."
Favorite toys in IT: "A Barbie boogie board, all the Formula race cars that we make to scale, plush toys like stuffed Mickeys and Pooh bears."
On-site amenities: Day care, a full gym, baseball diamond, volleyball court, full-service credit union and a toy store offering discounted products to employees.
The one thing everyone complains about: "It's hard to get our hands on the hot toys even though we work here."
Little perks: "We offer creative rewards, and we're getting more creative. We just sent four key employees for an all-expense paid trip to the Olympics, and we do things like a night on the town for an employee and their spouse. In January, I'll give IT staff the CIO Awards for teamwork, innovation, best customer service, best execution of a project – things that exemplify the values we embrace. Also, you can sign your kid up to be a toy tester, and you can get the newest toys in advance to take home and play with."
Would employees feel comfortable e-mailing the CEO? "Yes. He's very people-oriented and open."

– Leslie Goff (lgoff@ix.netcom.com)

PETER G.W. KEEN

A Truly Global Web

THE WORLD WIDE WEB (W3) is anything but worldwide in its impact on business. It's highly local. Internet "users" are people and companies who are very different both regionally and nationally in their demand patterns and behaviors. This is unlike the market for standard phone services, where the global differences are fairly narrow and mainly relate to price. With the Internet, one country's experiences may not in any way apply to another's. Here are examples of the differences around the world:

■ In the U.S., the main growth areas in business-to-consumer e-commerce have been in books, plane tickets and consumer electronics. It certainly won't be the same for Latin American and Asian countries with lower average incomes and weak telephony services. It's hard to see people in those countries yearning to get on the Internet to order books from Amazon and to bid on eBay. They're most likely to use e-mail, access entertainment and use the Net to help their children with their education. Shopping isn't the main priority; communication is.

■ The success of e-commerce rests on credit cards. Yet in much of Latin America, credit cards can only be used in the countries in which they're issued, and business credit is far more limited there than in the U.S. and Europe. And in Japan, business-to-consumer Internet commerce has been greatly constrained by the high fees that credit card companies charge merchants — around 10% of the amount of the sale, compared with 3% in the U.S. and Europe.

■ In the U.S., goods move simply and quickly, credit is widely available and there are few regulatory blockages. A small business can import and export easily. Many Asian and Latin American nations need improvements in these basic areas before business-to-business e-commerce can take off. So ports, customs agencies and trade financing are the key factors in those countries.

■ The primary access tools for Internet service vary widely. The U.S. has close to 40 personal computers per 100 inhabitants. Germany has just half that, and Latin American nations average around four. In China, there are 25 television sets for every personal computer. In India, telephone and Internet services are highly regulated, but cable TV service is a free-for-all. So in those two giant nations, it's the television and not the PC that's likely to drive the mass market. In Finland, however, it will certainly be wireless as the growth in new wireless subscribers has overtaken those of wired phones.

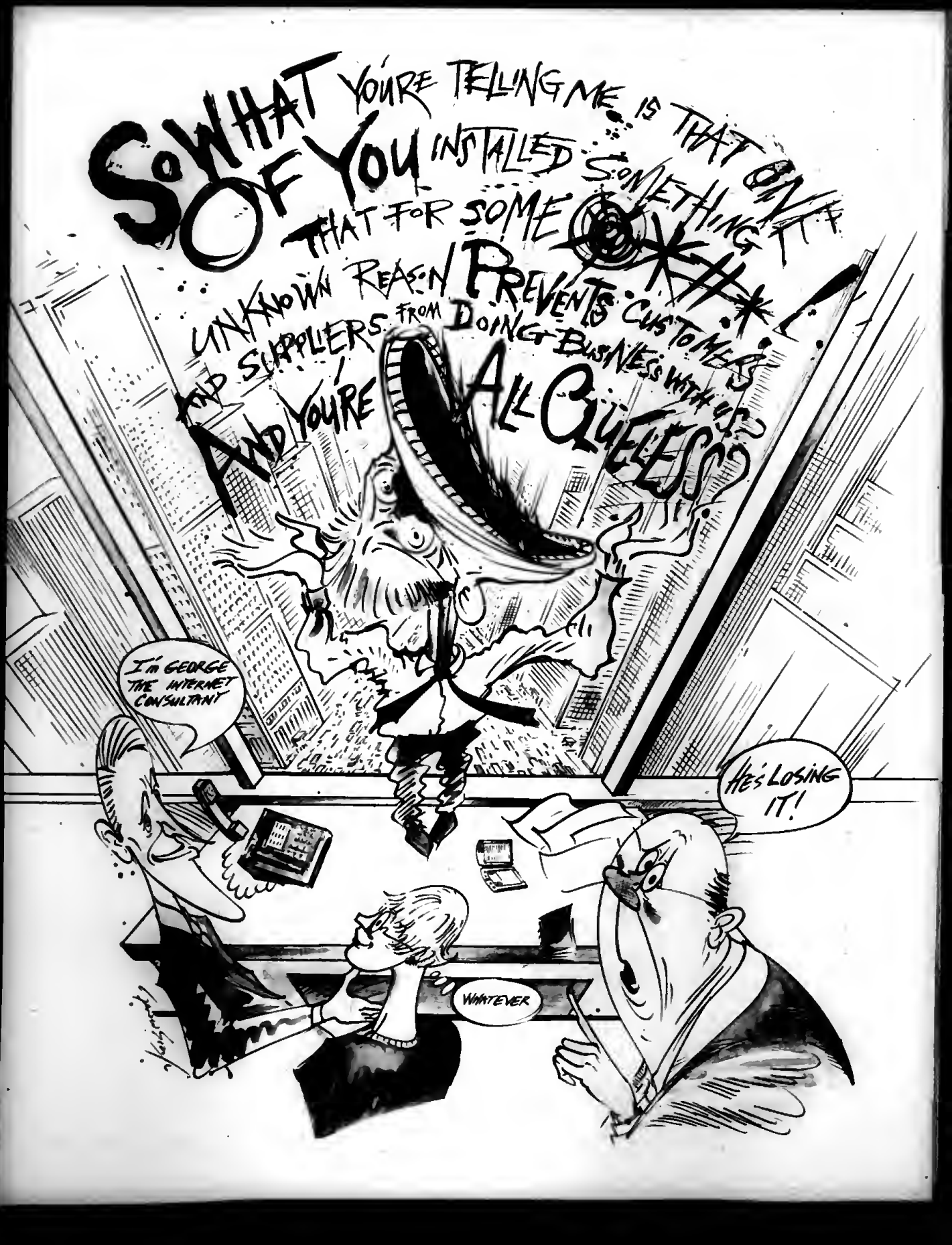
Next year should be the year when W3 becomes W5: the World Wide World Wide Web. Europe, lagging the U.S. in business-to-business e-commerce, is moving fast to catch up. It's way ahead of the U.S. in wireless technology and it's taking the lead in mobile commerce. Given that half the world's manufacturing is now in Asia, extending supply chains across the globe is obviously a priority for e-commerce logistics leaders everywhere. Many of the largest recent mergers and acquisitions are creating truly global firms targeting the consumer market, with German giants Mannesmann (Vodafone) and Bertelsmann (which holds a large stake in Barnesandnoble.com) taking the lead. Lycos is now owned by Telefonica, the Spanish phone company that dominates Latin America.

Next year should be the year when W3 becomes W5.



What does all this mean for IT and IT professionals? Whatever they decide it means. W5 is coming fast, and its growth will be more explosive than W3's growth to date. Almost all the discussion of e-commerce until today has been U.S.-centered. IT needs a new knowledge base in order to play a significant role in the W3-to-W5 expansion of e-commerce. It can't carry U.S. assumptions and experience about customers, supply-chain management, business-to-business, business-to-commerce, markets and technology into the global arena. There's an old precept, "Think globally, act locally." There's a danger for IT in thinking locally, then trying to act globally. So, think globally, and act globally. ◗

Keen is chairman of Keen Innovations in Fairfax Station, Va., a senior fellow of Differentis, a European B2B consultancy and a distinguished visiting professor at the University of Delft in the Netherlands. Contact him at peter@peterkeen.com.


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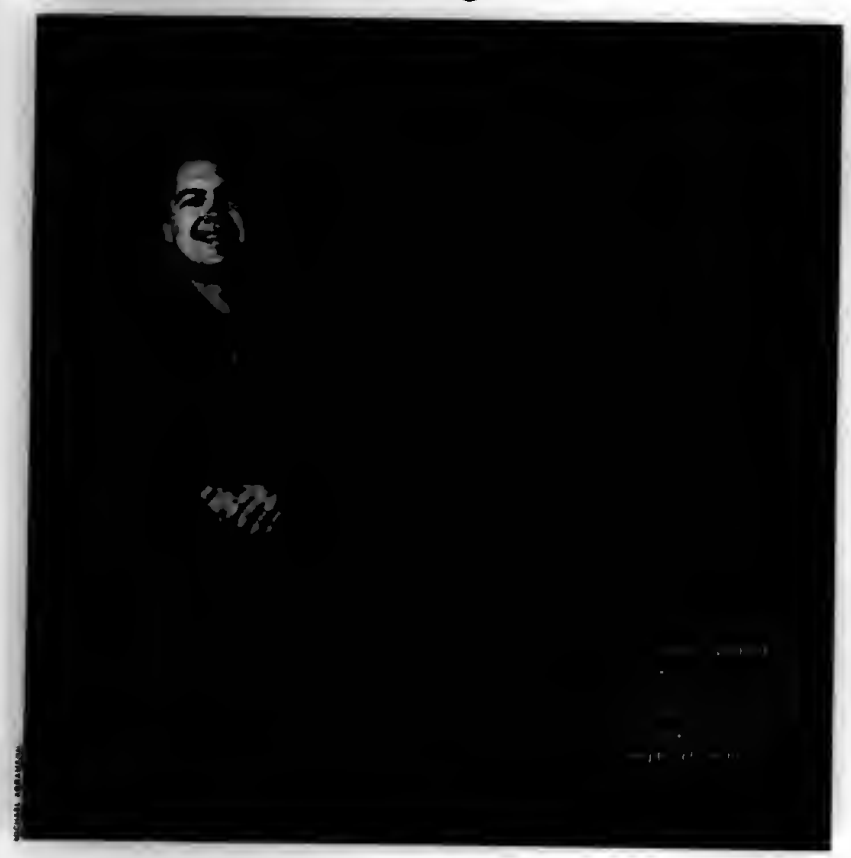
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Ensuring Portable Privacy

Banks, retailers and airlines face the 'opt-in' issue and other challenges. By Matt Hamblen



IN LESS THAN A YEAR, wireless phones in the U.S. must begin providing location information as part of the government's attempt to help police and fire dispatchers locate people in emergencies.

But privacy experts are already waving red flags, worrying that locatioo information could be misused by marketers or stoleo for illegal purposes. Their worries are sometimes extreme, with one privacy advocate recently wondering how long it will take before a lawsuit is filed because somebody stole location data to kidnap a child or stalk a stranger [News, Oct. 2].

Advocates say the problem with location data will become more worrisome because location technology will be available on all kinds of wireless devices, such as personal digital assistants and laptops equipped with wireless cards, not just wireless telephones.

The 1999 Wireless Communications and Public Safety Act permits release of location data in emergencies for wireless telephones, specifically, but the Federal Communications Commission's definition of what constitutes a phone is still legally unclear, says David Sobel, general counsel for the Electronic Privacy Informatioo Center in Washington.

"We can't foresee how this location information will be abused, and most people consider it to be very personal," Sobel says. "The privacy protections for location informatioo are not at all clear."

Will Data Find You?

The privacy of consumer location data is one of the key issues U.S. banks, retailers and airlines will face as they roll out services that send advertising and information to wireless users. Businesses will also need to bolster security to protect location and other private data and develop means of preventing wireless spamming, experts say.

Sobel says he hopes some clarity is brought to the issue at a Federal Trade Commission-sponsored public workshop starting today in Washington. Jodie Bernstein, the FTC's top consumer official, has already said the agency may initiate privacy rules on wireless but is also concerned about stifling the wireless industry [News, Oct. 9].

The sanctity of location data falls squarely into the laps of U.S. businesses, especially wireless carriers. Businesses claim that they will respect the privacy of wireless users when sending digital coupons for stores that consumers are near, the locatioo of the nearest cash machine or updates on a flight or hotel reservation by allowing users to "opt in" — or agree to participate in marketing programs that use their locatioo data.

"We are very, very wary of hlasting wireless customers with information," says Alan Young, vice president of technology at e-Citi, a division of Citigroup Inc. in New York. "Our rule is that customers are to be given an option to start services and given an opportunity to stop it."

But How?

The logistics of how consumers will opt in and out aren't well defined, analysts say, citing several concerns.

First, it would be impractical to put pages of privacy disclosure information oo a four-line cellular phone screen for a user to click a huttoo to opt in or out, analysts say.

So would the disclosure notice be provided wben a phone is sold, or later, over a desktop PC hooked up to the Weh? And would someone who opts in be ahle

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Ensuring Portable Privacy

Continued from page 46

to easily opt out later? Analysts say it wouldn't be practical to expect a user to opt out during a business trip using a cell phone or other small wireless device.

Second, wireless spamming is a distinct worry, say several analysts and IT executives. A user might consent to a profile of notices he would like to see based on his location only to later be hit relentlessly by wireless ads, notices for local restaurants and shopping advice while walking down a city street and passing by stores equipped with Bluetooth, 802.11 LAN or wide-area wireless technologies.

"Picture the scenario of somebody walking into a mall and being bombarded with information from all the stores," says Joy Marshall, manager of the E-business Frontiers group at Wachovia Corp. in Winston-Salem, N.C. "We've got tremendous concern about how location-based technology will aggravate customers."

What's in It for Me?

A major deterrent to pushing wireless ads and information, whether they're location-based or just pushed, will be the cost, since wireless users in the U.S. pay for the cost of sending as well as receiving calls and data, says Alan Reiter, an analyst at Mobile Internet & Wireless Computing in Chevy Chase, Md.

Analysts at IDC in Framingham, Mass., and LM Ericsson Telephone Co., the Swedish handset manufacturer, say studies of wireless users in Europe and the U.S. show that consumers are willing to accept personalized ads if they get something in return, such as a free information service or airtime [*Computerworld.com*, Nov. 9].

Analysts say there are also concerns that a bank could sell data on customers to retailers that might want to attract people who have recently retrieved cash from nearby ATMs.

Which raises the third major concern: Who owns the data?

"A consumer theoretically could say whether he wants his location kept secret or not when he signs up for a wireless service, but the real question is who owns that location information? It's not clear," says John Pescatore, an analyst at Gartner Group Inc. in Stamford, Conn. "Legislation or other rules need to require opting-in for service."

Several cellular carriers such as Sprint PCS Group in Kansas City, Mo., and AT&T Corp. say they use the existing information on the location of a phone (which is now based on the nearest cellular tower) only to make connections and bill calls. All the cellular carriers interviewed by *Computerworld* for this report said they intend to guard that information unless consumers want it used.

But that's only for the time being, analysts say, because marketing groups, ad agencies and other businesses will be actively trying to gain access to the location data — which could, in turn, be sold widely.

In the hopes of lessening the need for government regulation, the Cellular Telecommunications Industry Association (CTIA) in Washington, which represents more than 140 carriers and hardware makers, passed a set of guidelines in October for cellular privacy. A CTIA spokesman says the group hopes the guidelines will gain acceptance by carriers and businesses that will send out wireless ads (see list at right).

"Worries about Big Brother with location services are premature," says Travis Larson, a CTIA spokesman. "We're getting out in front on what emergency 911 services will mean. After they take effect next October, obviously, commercial location services will follow, and we want consumers to be comfortable knowing that there are industrywide guidelines to protect their privacy."

The CTIA guidelines make it clear that consumers would know exactly how the data would be used and would have meaningful access to the data to ensure information is accurate and that the same information would apply to all types of devices.

Carriers say they're having active discussions within their companies about the privacy concerns of wireless location data as well as the business benefits. "We don't know how location data will be managed or who is going to retain the information, because the technology is not even fully widespread for commercial availability," says AT&T spokesman Ritch Blasi.

AT&T, in Basking Ridge, N.J., is the wireless carrier for an ongoing location services trial in Denver.

Visa International Inc. in Foster City, Calif., is monitoring reaction to a location-based services trial in an undisclosed market in Asia before moving forward, says Philip Yen, executive vice president of e-Visa.

Visa recently began requiring member merchants to post their privacy policies on their Web sites and is favoring a policy that will require opt-in for location services, he says.

But, Yen adds, he's not confident that "natural forces" such as self-policing by the wireless industry and third-party businesses will be enough to protect wireless privacy.

Airlines Ready for Action

At United Air Lines Inc., officials are eager to let passengers use wireless devices to check in for flights once they are within a certain distance of the gate. Someday, a short-distance wireless technology such as Bluetooth will also monitor when the person passes through the gate, says Dan Black, director of e-commerce systems at United Networks, a new network technology division Chicago-based United.

"I would be worried about keeping location data on customers," Black says. "I would not even want to see that data, but I think the carriers are going to sell me that."

Black says he's hopeful that wireless consumers will be able to set general location preferences, such as allowing only a spouse and parents access to location information.

Best Buy Inc. in Minneapolis recently began selling its wares via wireless connections. Company officials believe that "a segment of the market wants to be alerted to sales opportunities when they are in proximity to a store," says Mark Ebel, director of digital communication services for the retailer. "But if you thought you had to be careful to privacy before, wireless means you have to be extremely sensitive to privacy." ●

MORE THIS ISSUE

For more about the future of wireless communication, **see page 78.**

Wireless Privacy Guidelines

The Cellular Telecommunications Industry Association adopted the following wireless privacy guidelines in October to be presented to the Federal Communications Commission and the Federal Trade Commission:

1. Consumers need to be informed that information on their location is being collected.

2. Consumers need a meaningful opportunity to proactively opt in for location services, and they should be made aware of exactly what's being collected.

3. Location information needs to be kept secure and correct, and consumers need meaningful access to their own location information.

4. These guidelines apply across the country, in all states; across all types of platforms; whether they be handhelds, wireless phones or PDAs; and across all the businesses involved, whether they be carriers, handset manufacturers or third parties.

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Culture Chic

Forget stock portfolios and medical plans — stylish companies such as Minnesota Life are flaunting their corporate cultures to gain the eye of potential job candidates.

By Kim Fulcher Linkins

Do you ever have a job where you got thrown into a cubicle alone, sort of like standing by yourself at the end of the ski lift ticket line, shouting, "Anyone riding single?"

You won't find that problem at Minnesota Life Insurance Co. in St. Paul, Minn. Employees — or associates, as they're called — cite the warm, friendly people as their biggest attraction and the thing that has helped the company sustain an almost 90% retention rate for the past 10 years.

"People are definitely people, or parts of teams, vs. being treated as numbers," says Jean Delaney Nelson, Minnesota Life's vice president of information services. "Our environment is professional but still friendly and interactive."

Minnesota Life developed this close-knit group of people by targeting recent college graduates in recruiting, and then by making the transition to work life conducive to a long-term work relationship.

By targeting recent graduates, the company is able to train new hires in their jobs and in what it's like to work at Minnesota Life, Nelson explains. Then the new associates give the more experienced associates a chance to manage and mentor people.

"From the interview on, potential associates are exposed to the company's corporate culture to give them an idea of what they're really getting into," Nelson says. "We want to retain them, so we want them to have a true and accurate picture of the work culture and the environment at Minnesota Life."

The point to all this culture flaunting is so "they know what they're saying yes to when they choose to say yes and that it's going to be a long-term relationship. And that's to our advantage and theirs," Nelson says.

Minnesota Life recruiters present the company culture to potential candidates oo local campuses. The company also sponsors some courses at local colleges and universities to make the Minoesota Life name visible to students.

While sponsoring such courses, the company often invites the students to its headquarters for preseotations or tours. Minnesota Life also sponsors between 15 and 23 internships per year.

The Big Picture

For studeots applying for full-time positions at Minnesota Life, the interview process involves several people, from human resources to management to recent hires, to give applicants a complete picture of the company.

"They have an information session with a recent graduate who can tell them what it's been like for them going through training, how they adjusted here to the Twin Cities, have they been able to make friends, what type of social or fun activities are available," Nelson says.

The company's work culture involves events such as company-sponsored marathons, paintathons and other charitable activities. There are also other activities such as a golf league and basketball and volleyball teams to enable new associates to socialize and familiarize themselves with the Twin Cities, Nelson says.

During the workday, in addition to "chat breaks" and "decompression sessions," associates can take advantage of noon seminars that help people deal with stress and family issues, says David Rockwell, director of network services. Associates can also take part in activities such as picnics and parties to celebrate birthdays or other notable occasions.

Rockwell says the daytime diversions are geared toward encouraging a work and life balance that's part of the company's culture. Along with that, he says, associates are working with technology that's on the cutting edge, so their skills need to be sharp.

"Our associates have the opportunity to be exposed to and utilize leading-edge technology. We were early adapters of oot only service sites out on the Web, but transactional sites out on the Web," Nelson says.

Minnesota Life goes to great lengths to train its people in these technologies, she says. The efforts start with a three- to four-month training program for new hires, and include continuing education after that.

"As a result, people have the opportunity to not only grow within a selected career path, but they also have the opportunity to grow and acquire new skills and shift and change career paths," Nelson says. "So you can eoter the organizatioo through one field or discipline and as you grow through your career, you can shift disciplines."

Not only are new hires aided in developing skills through ongoing training, but potential candidates don't necessarily have to be the traditional techheads, Nelson says.

Minnesota Life has been able to build a reputation of friendliness through its recruitment efforts on college campuses. This reputation has helped keep a steady supply of candidates coming its way, even though the IT job market is tight, Nelson says. "Minnesota Life has been successful in maintaining an inviting corporate culture by recognizing the strengths and weaknesses that the company has," she says. ◗

Linkins is a freelance writer in Austin, Texas.

Promoting Culture To Attract Hires

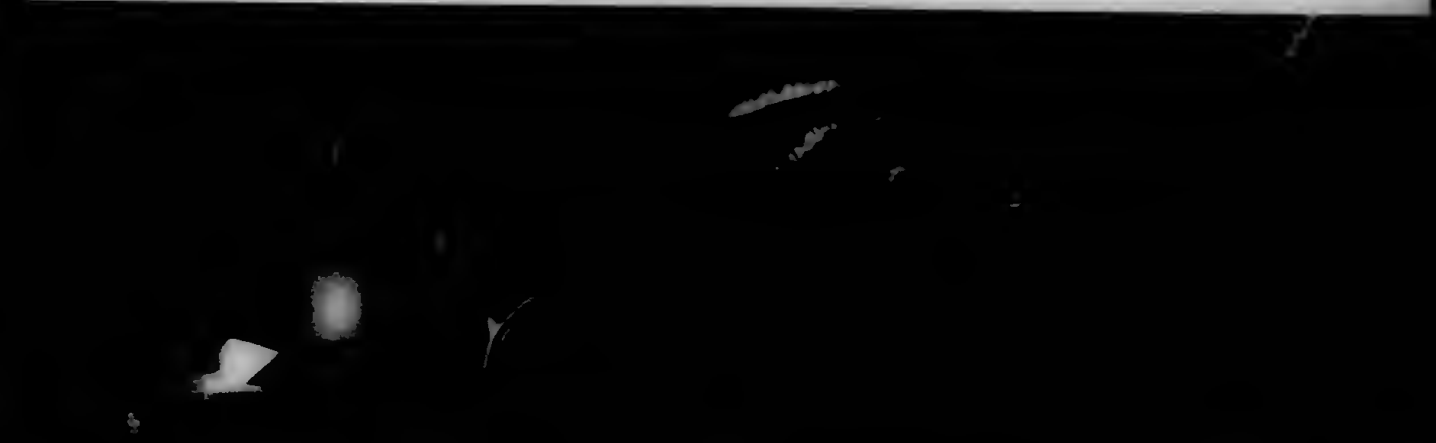
- How to promote your company's corporate culture: The most sensible way to attract and keep IT workers is to establish a reputation as a stable business that's employee-centered and uses cutting-edge technology.
- How to establish such a reputation: The best way is by word of mouth, says Ann Wolbert, human resources representative at Minnesota Life. "Our associates and interns are our best ambassadors," she says. "Missy Vollmer, for example, is a former intern who had a great experience, went back to college and told her friends that Minnesota Life is a great place to work."
- What is valuable to promote: Focus on the individual, ongoing training and the opportunity to use the latest technologies.
- What employees look for most in a corporate culture: "Respect," says Jean Delaney Nelson, vice president of information services at Minnesota Life. "Valuing the individual and recognition and the opportunity to grow and be challenged attracts a talented pool of candidates."
- Successful hiring philosophy: "We are looking for people who have the right fit. Even though the IT market is very tight right now, sometimes we will have positions vacant even though we could maybe put somebody in it who might last here maybe a year or two years," Nelson says. "But if we recognize that it's a 10-year fit, that it's not a long-term fit, we won't bring them on. Instead, we look for what is the right long-term fit."
- How to measure success: Look at long-term retention rates.

—*Kim Fulcher Linkins*

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Count Dracula,

The Creature from the Black Lagoon

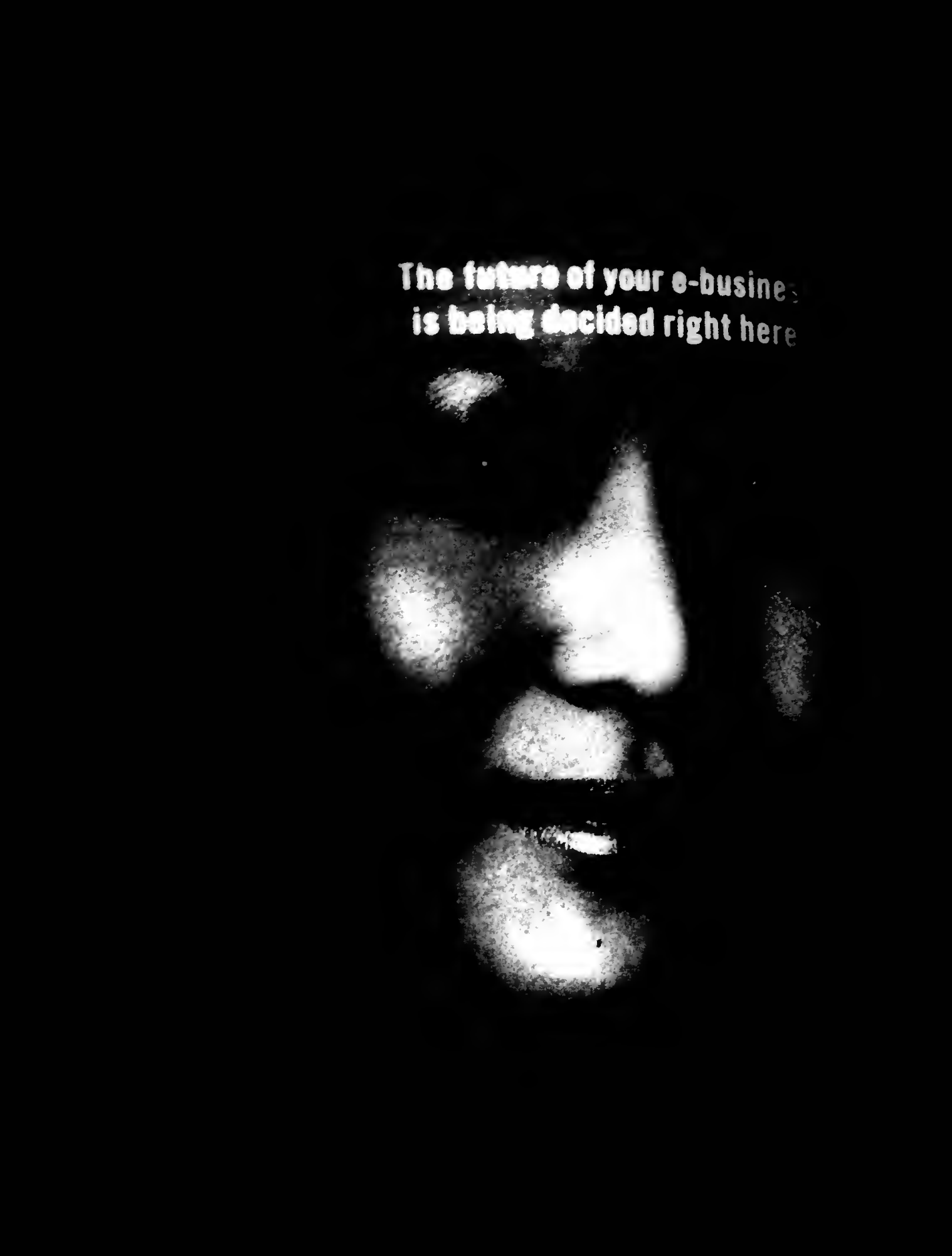


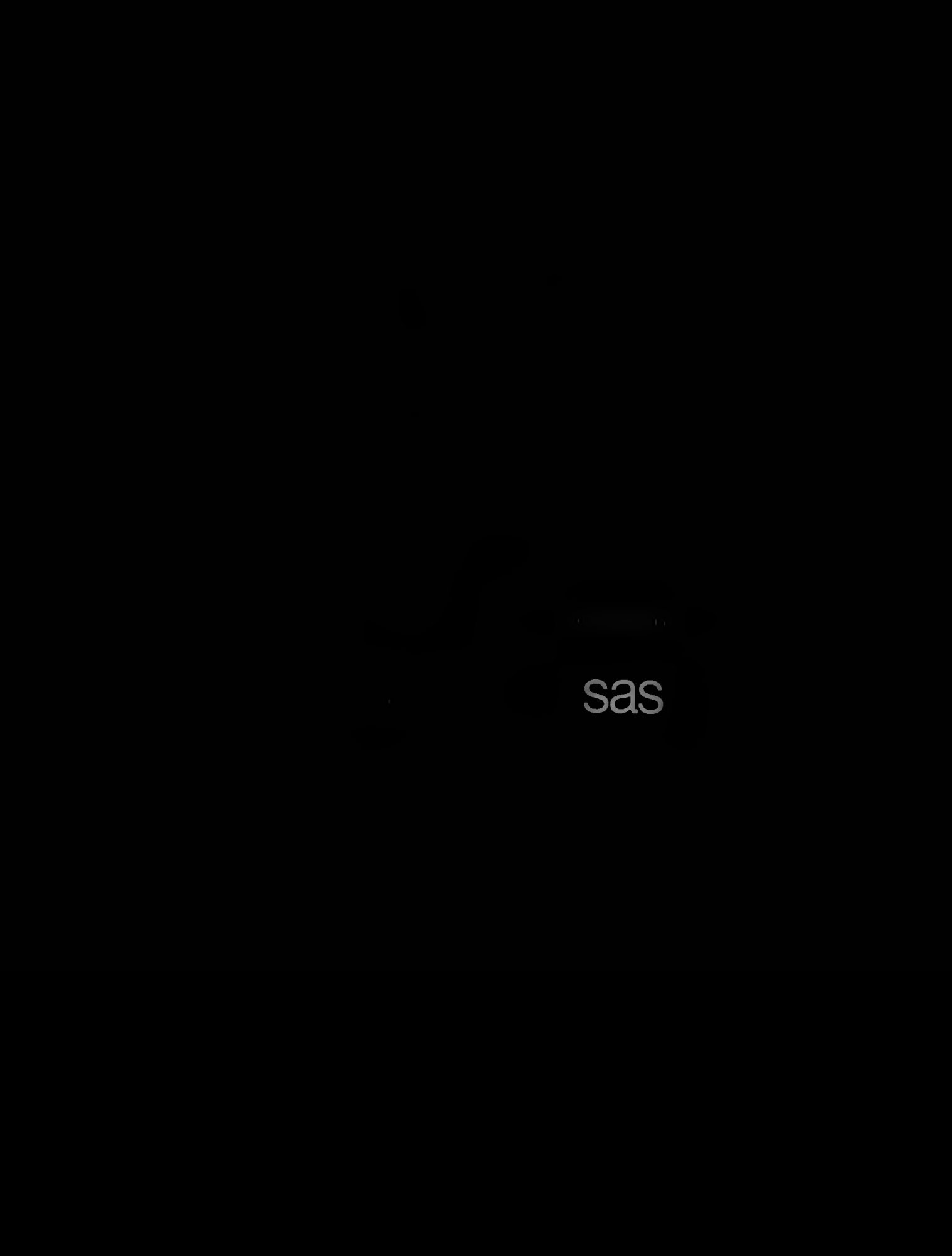
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The tight labor market has encouraged some Silicon Valley employers to broaden their searches for minority IT workers. But critics charge that many companies are still more interested in importing foreign workers than they are in targeting underrepresented local minorities. By Kathleen Melymuka

DABBLING AT DIVERSITY

VINCENT ESTACIO, 29, is an up-and-coming systems administrator at Sun Microsystems Inc. in Mountain View, Calif. In August, he graduated from a community-college-based program that trains minorities with IT potential, and now he's working full-time on Sun's systems migration team.

Sun reached out to local Latinos and found Estacio, and that has made all the difference to his career.

Although Silicon Valley tends to see itself as a meritocracy that's bias-free, the Sun example is an exception rather than the rule. Advocates say the region still includes too many firms whose posture toward workplace diversity is passive at best. In an area where blacks and Latinos are underrepresented in IT companies by approximately 50%, passivity isn't good enough.

"There are companies who are talking the talk," says one recruiter who works in the valley, "but when they realize what it takes to walk the walk, they don't have the resources — or the commitment — to do it."

According to the *San Francisco Chronicle*, African-Americans and Latinos make up 8% and 14% of the region's available workforce, respectively, yet they make up only 4% and 7% of the employees at 33 leading Silicon Valley firms.

But Silicon Valley executives swear they'll hire anyone who can "talk and smile," as one put it. And some point to the same study, which showed Asian-Americans holding 28% of the Silicon Valley jobs despite making up only 21% of the overall workforce.

The overrepresentation of Asians and the increasing visibility of Indians make for rosy statistics that fail to illustrate that African-Americans, Hispanics and others, though often welcome, frequently find themselves across the digital divide without a bridge.

"There's lots of diversity in the IT world," says Ruben Barrales, CEO of Joint Venture Silicon Valley Network, a San Jose nonprofit collaboration of high-tech companies and local government focused on workforce development and education. "But when you look at traditionally underrepresented groups like Hispanics and African-Americans, the numbers are different."

KNOWING THE ROPES

At Sun, Byron Gutierrez is a Solaris "gatekeeper" who evaluates new features or patches and integrates them into main code. He says Sun is — and has to be — color-blind.

"It's hard to find people," Gutierrez explains. "If I can find a qualified engineer, [race] just doesn't matter. You just need someone to do the work."

Even so, Gutierrez says many minorities have no one to show them the ropes of the IT world. Using himself as an example, Gutierrez says he discovered a talent for IT while playing around with an Apple II in college.

"But I had no idea you could be paid for this," Gutierrez says. "No one I knew knew anything about computers. To them, an IT career was like a philosophy degree: What are you supposed to do with it?"

When he graduated with a math and computer science degree and got his first job in IT, Gutierrez never questioned whether his salary was fair. "Hispanics don't do a good job of negotiating," he says. "When somebody tells you what the job pays, you assume it's the truth."

When a friend in human resources tipped him off that he was being underpaid by about half, Gutierrez tried to move up. But he found that his perceived value in the company and on the job market was tied to his low salary. Eventually, he got a good offer from Oracle Corp. with a 50% raise, and he later moved to Sun, where he mentors younger Latinos. "I make sure they're educated," he says.

"Everybody supports diversity in hiring, and I think they are absolutely honest," says Barrales. "But the challenge is finding those candidates who may be qualified."

Hispanic and African-American students often get tracked out of science and math as early as elementary school, Barrales says. As a result, "African-American and Hispanic kids are not reaching high academic performance along with their peers in the Asian and white communities, and to get these IT jobs, you need these basic skills," he says.

Finding and boosting minorities with IT potential is the goal of organizations like Joint Venture. With the help of local community colleges, along with the National Science Foundation, the U.S. Department of Labor, Oracle and Sun, the group is supporting an effort to provide IT training to Silicon Valley residents from underrepresented populations that's partially funded by H-1B visa fees.

One such program was this summer's two-month "boot camp" at Evergreen Valley Community College in San Jose. The 16 male and 12 female students represented 15 Latino, three African-American, three Pacific Islander, four Vietnamese and three Caucasian students between the ages of 17 and 45.

The students, who needed to be computer-literate going into the program, went through two months of eight- to 12-hour days, seven days a week. "And every one of them hung in there," says instructor Henry Estrada.

Most are now working as junior Unix or Solaris systems administrators while continuing to expand their skills at Evergreen.

Estacio, a graduate of the Evergreen program, says skills are the key to getting a job in Silicon Valley. "They are after knowledge, and that's it," Estacio says, adding that he doesn't feel his ethnicity was a factor in his hiring or that it will be in his success.

NOT SO FAST

But absence of bias isn't enough, says John W. Templeton, a co-convener of the Coalition for Fair Employment in Oakland, Calif.

"It's pretty clear that companies have not been engaged in any of the most basic behaviors one would undertake if attempting to recruit African-Americans or Latinos," Templeton says.

Templeton notes that when the National Action Council for Minorities in Engineering and the National Black MBA Association held their annual meetings in California this year, the number of Silicon Valley firms that

showed up to recruit could be counted on one hand.

William Spriggs, director of research and public policy at the National Urban League Inc. in New York, agrees. "You see lots and lots of companies that use our site to recruit workers, but none from Silicon Valley," he says. "They don't come to our conferences either. There seems to be a total ignorance of how you do diversity."

Raising the H-1B visa cap is also a step backward, Spriggs says. "When 12 [corporate] people are handling H-1B and two people are doing diversity, you get a clear signal about the intent of the company," he says. "You can't always claim they discriminate, but it's clear they show no commitment."

Templeton says that San Francisco-area African-Americans are much more likely to work in IT departments in non-high-tech companies that do reach out.

"When you go to a Black Data Processors Association meeting in the Bay area, it's held at Kaiser," Templeton says, "and the people work for PG&E, Wells Fargo — places like that. We have more black programmers at area banks than in Silicon Valley."

The Coalition for Fair Employment last year filed a class-action civil rights complaint against 1,400 Silicon Valley companies, claiming that as many as 90% of high-tech firms in the valley don't even bother to file required Equal Employment Opportunity forms with the Department of Labor.

The dearth of American Indians in Silicon Valley is more a matter of supply and demand than it is lack of commitment, says Everett Chavez, director of the American Indian Science and Engineering Society in Albuquerque, N.M.

"Companies [including Intel and IBM] have partnered with us to help students with scholarships, internships and co-op type programs, but we just can't crank them out fast enough," Chavez explains.

For example, Applied Materials Inc. in Santa Clara, Calif.; Silicon Graphics Inc. in Mountain View, Calif.; and Sun, the only Silicon Valley-based companies to rank among Fortune's Top 50 for Minorities, claim that American Indians make up a meager .3%, .2% and .4% of their workforces, respectively.

But Sam Sekaquaptewa, a Hopi who started at San Jose-based Cisco Systems Inc. right after graduating from the University of Arizona in Tucson, says he has no complaints. Eighteen months and two promotions later, he's an internetwork project engineer.

"It seems like a color-blind place to work," he says. "If you perform well, you'll do well."

Diversity 101

New Hope, Pa.-based Simmons Associates Inc. (*www.simmonsassoc.com*), a diversity consulting firm, suggests taking the following basic corporate diversity initiatives.

- Establish networks with minority colleges.
- Offer internships and scholarships.
- Sponsor job fairs in minority communities.
- Develop partnerships with minority student professional groups or corporate organizations.
- Develop partnerships with minority organizations.
- Develop community outreach programs.
- Tap all known Web sites where résumés of diverse groups of individuals might be found.
- Ensure that all interviewing practices are fair and legal.

BEYOND TOLERANCE

Since the San Francisco area is one of the country's most welcoming to lesbian and gay people, many firms are sensitive to the needs of this community.

Many of the leading IT firms there include sections on sexual orientation in their nondiscrimination policies. More telling, firms such as Hewlett-Packard Co., Intel Corp., Sun, Oracle, Apple Computer Inc. and Seagate Technology Inc. in Scotts Valley, Calif., among others, back up their words with domestic-partner health benefits.

But Charles Lickel, general manager of IBM's Silicon Valley Lab in San Jose, says just tolerating gays and lesbians isn't enough. Real diversity requires building a work environment where differences are discussed openly in a positive light and embraced by leadership, he says.

"We're an environment where the demand for technical skills is more and more and the shortage of those skills is greater and greater," says Lickel, who is gay. "You need to build that environment or you can't draw from the entire pool, and we will fail as a business if we don't."

The situation in the valley may be best illustrated by the words of a vice president at a small start-up who, like most of his peers, says he would fight discrimination if he saw it.

"Technology is largely a meritocracy," says the vice president, who asked to remain anonymous. "If you find someone who can write Java code, you hire him. The farthest thing from your mind is ethnic differences."

But pressed on the specifics of his company, he acknowledged that this laissez-faire approach cuts two ways. The company workforce, he says, is "a bunch of 20-year-old, ethnically alike guys." ▶



HIGH-TECH EMPLOYERS "are after knowledge, and that's it," says Vincent Estacio, a systems administrator at Sun Microsystems.

RESOURCES

Project Hired (disabilities)
LOCATION: *Santa Clara, Calif.*
PHONE: *(408) 557-0880*
WEB: *www.projecthired.org*

California Business Leadership Network
LOCATION: *Santo Cruz, Calif.*
PHONE: *(831) 457-2709*
WEB: *www.cabln.org*

Society of Hispanic Professional Engineers
LOCATION: *Los Angeles*
PHONE: *(323) 725-3970*
WEB: *www.shpe.org*

National Society of Black Engineers
LOCATION: *Alexandria, Va.*
PHONE: *(703) 549-2207*
WEB: *www.nsbe.org*

The IndUS Entrepreneurs/ TIE Silicon Valley
LOCATION: *Santa Clara, Calif.*
PHONE: *(408) 567-0700*
WEB: *www.tie.org*

The National Technical Association Inc.
WEB: *www.ntaonline.org*

National Action Council for Minorities in Engineering Inc.
LOCATION: *New York*
PHONE: *(212) 279-2626*
WEB: *www.nacme.org*

iMinorities Inc.
LOCATION: *New Orleans*
PHONE: *(504) 523-0154*
WEB: *www.iminorities.com*

Society for Advancement of Chicanos and Native Americans in Science
LOCATION: *Santa Cruz, Calif.*
PHONE: *(831) 459-0170*
WEB: *www.sacnas.org*

National Society of Hispanic MBAs
LOCATION: *Dallas*
PHONE: *(877) 467-4622*
WEB: *www.nshmba.org*

American Institute for Managing Diversity
LOCATION: *Atlanta*
PHONE: *(404) 302-9226*
WEB: *www.aimd.org*

Rainbow/Push Coalition's Silicon Valley Project
LOCATION: *San Jose*
PHONE: *(888) 506-3617*
WEB: *www.rainbowpush.org*

BDPA IT Thought Leaders (formerly Black Data Processing Associates)
LOCATION: *Largo, Md.*
PHONE: *(301) 350-0001*
WEB: *www.bdpa.org*

PlanetOut Corp. (gay/lesbian)
LOCATION: *San Francisco*
WEB: *www.planetout.com*

COMPILED BY COMPUTERWORLD RESEARCH MANAGER MARI KEEFE

Coddling THE Customer

ECRM tools have come a long way. Yet companies continue to misdirect **a massive amount** of support toward their least-profitable customers. **What gives?** A roundtable discussion explores the issues.

By Thomas Hoffman and Sarwar Kashmeri

IT'S THE OLD 80-20 RULE: 20% of your customers deliver 80% of your profits. But despite ongoing advances in the functionality of electronic customer relationship management (eCRM) systems, many organizations continue to struggle with how to effectively target and coddle their top clients.

Computerworld business features editor **THOMAS HOFFMAN** and online daily newspaper *ebizChronicle.com Inc.* publisher **SARWAR KASHMERI** receotly sat down with a panel of experts to explore these and other eCRM-related challenges.

■ HOFFMAN: HOW WOULD YOU DEFINE ECRM?

PAUL COLE: You have to start by asking what does the e stand for, and does it stand for *electronic* or does it stand for *enterprise*? I think eCRM is distinct from CRM [in] the convergence of marketing, sales and customer service into a cootinuous process.

So the movement [is] from an emphasis oo individual functions — marketing, sales and service, which I think typify CRM in the past — to the integratioo of those things into more of a real-time environment, and there's much less distinctioo betweeo what is marketing, what is servicing and what is selling.

JIM GOLDFINGER: There are really two dynamics. First off, it's the webification of traditional CRM, where the customer now has direct access to selected data. Next, it's the introduction of additional channels of communication such as Web, e-mail and chat. In essence, we are entering a period where the customer has more influence on the method and means of communication.

■ KASHMERI: IF YOU WERE DEVELOPING A CHECKLIST OF CRITICAL, KEY ECRM COMPONENTS, WHAT WOULD THEY BE?

MEHRDAD LAGHAEIAN: For us as a manufacturer, what eCRM had to have was the capability of participating in any and all potential markets and marketplaces, portals — whatever you want to call it.

So we needed to be able to exchange information such as letters of credit and paymeot histories securely betweeo ourselves and other suppliers, and for the computers to communicate with each other.



So it was very simple. I want my information to not only be available to a human interface hut also to a machine interface. And I want to be able to connect to any marketplace, as long as they adhere to certain Internet-based standards as seamlessly as possible without creating the kind of challenges that we had trying to do the same thing with [electronic data interchange].

BOB AUSTRIAN: We tend to think, rather than in terms of what are the minimum requiremeots to be inchided, what are the maximum requiremeots to possibly be king of the domain?

Every channel, every media needs to be ahle to interface with every customer, whatever type of customer that

is, and the oeed to be able to integrate with every execution system.

COLE: I think technology is neither the problem nor the solution.

If it's around relationship management, that has to do with a philosophy of how you're running your business, and like any good consultant, we have our Top 10 !ist of what characterizes a company's excellence and distinguishes a company from its peers.

They include economic segmeotation, assuming that all customers are not created equal and servicing different customers differently; a customer scorecard, which says you measure your business not only based oo your productivity and your efficiency but [oo] the effectiveness of the experience with the customer; and "one and done," which is the ability to solve the issue the first time.

GOLDFINGER: From my perspective, analytics are going to become a much bigger part of this business.

There have been analytics tools out there for a oumber of years, but they're just becoming properly applied to CRM data.

GLENN BERKWITT: The ability to make sense of large amounts of data is tbe challenge today. All of the channels into companies and across departments have resulted in huge volumes of data that frequently are not used.

■ HOFFMAN: SOME SALESPEOPLE CLAIM THAT THERE'S TOO MUCH CUSTOMER DATA BEING THROWN AT THEM. WHAT DO YOU MAKE OF THIS?

LAGHAEIAN: Actually, the feedback that I have gotten from the sales group since we began installing SAP CRM [in October] has been very positive, primarily because of the features of CRM, which make information available to them and their customer base. In our case, CRM has meant fundamentally rethinking how some of the business processes that we have are cooducted oow.

GOLDFINGER: I believe there was a move toward too many features [especially in sales force automation software], and that was bogging down salespeople. There were too many screens, too much stuff to do, too many places to go.

The data is quite useful when utilized effectively. If I know this customer just called in with a problem this morning, I would likely alter my sales pitch this afternoon as a result.

■ KASHMERI: HOW SHOULD COMPANIES TREAT ECRM FROM A RETURN-ON-INVESTMENT STANDPOINT?

COLE: Either you're going to acquire more customers, change the mix of what they buy to make them more profitable or keep them longer. Yet a study we completed over the summer revealed that 44% of the companies hadn't measured their return on investmeot.

LAGHAEIAN: Our objective was not to be cost-reduction-oriented in our e-business strategy. To us, CRM has meant better managing our customers and the relationship with them by enabling business information flow, such as pricing, inventory and planning, in both directions. If we do that and communicate more effectively with our suppliers, we'll reduce our inventory across the board.

BERKWITT: We're able to measure ROI in terms of the numbers of bodies that are required to service customers and whether we are able to successfully automate the work of our customers' companies.

GOLDFINGER: Most of us who are in the for-profit game want to do customer service better for one reason, right? We believe that it will lead to more sales. And yet I have seen very few companies actually attempt to measure the cost and effect of better service levels.

Companies say they want to make sure they handle X percent of calls in the first four hours, or they doo't want more than 20% of the calls to be dropped or abandoned, and they never know quite why in terms of any incremental change in revenue. They just set goals, and at some point, there is a point of diminishing returns, but this is rarely measured.

COLE: A lot of mistakes have been made by companies thinking that what they were doing is displacing phone calls with much cheaper Web hits. Then, if you look at their Web sites, they don't list their 800 number, and it's as if they don't want you to call, and so the whole thing is backfiring and the cus-

Every channel, every media needs to be able to interface with every customer, whatever type of customer that is.

BOB AUSTRIAN, SENIOR INTERNET AND ENTERPRISE APPLICATIONS ANALYST, BANC OF AMERICA SECURITIES

The Panelists



Mehrdad Laghaeian
Vice president and CIO at Osram Sylvania Inc. in Danvers, Mass.

Glenn Berkwitt
Vice president of corporate marketing at Primus Knowledge Solutions Inc. in Seattle

Bob Austrian
Senior Internet and enterprise applications analyst at Banc of America Securities LLC in San Francisco

Jim Goldfinger
Vice president of CRM strategy at PeopleSoft Inc. in Santa Clara, Calif.

Paul Cole
Global director of the CRM service line at Cap Gemini Ernst & Young U.S. LLC in Auburndale, Mass.

Coddling THE Customer

tomers get frustrated. The ability to go seamlessly between a telephone call center and a Web site for assistance is the Holy Grail of CRM. So the notion of being able to interact with the customer and make yourself accessible when and how they want is the answer, and to do that in a way that both satisfies them but also lowers your cost.

■ **HOFFMAN: WHAT'S ON YOUR ECRM WISH LIST GOING FORWARD?**

LAGHAEIAN: My wish list has a lot to do with features that don't make it to the front office. So it's not just being able to tailor the content and the offerings down to the individual user within that particular customer company. For manufacturing companies such as ours, information flow between our partners and us is the ultimate goal.

There's also a lot of information we'd like to receive as a customer from our suppliers that we don't currently, such as a very accurate online catalog that has our specific parts that we buy from a vendor plus the price of that specific part to us based on our contracts.

AUSTRIAN: As an end user of CRM systems from Siebel and others, I'd like to see much more sophisticated workflow management. The second improvement would be easier integration with our existing systems. And the final one would be easier mass-customization, so that every user would be able to create the interfaces that he or she wants.

■ **KASHMERI: WHAT IMPACT DO YOU EXPECT WIRELESS SERVICES TO HAVE ON ECRM?**

AUSTRIAN: The wireless enablement of your customer relationship or any other enterprise system is an absolute prerequisite. If you can't do that in the next year or two, your system is going to be obsolete.

GOLDFINGER: Wireless will have a tremendous impact on CRM, but it's not here yet. The infrastructure to support wireless is not quite as pervasive as we need it to be.

The real trick will be to build the right applications for the right devices, which will likely take a few iterations.

LAGHAEIAN: We did a proof-of-concept on using wireless — it worked — and then we shelved it because it was more something that IT wanted to do as opposed to something the business has identified as a need.

We just haveo't been able to put our finger on how we're going to apply that toward our business.

COLE: I was just reading that we are just finishing the "stupid" phase of the e-commerce era, which I thought was pretty interesting.

We may be entering the stupid phase of the [mobile-commerce] era. We'll put things that shouldn't be on a cell phone screen on a cell phone screen because we can, or we'll view m-commerce as a completely separate market wbeo it's really just an enablement of a different experience.

■ **KASHMERI: IS IT POSSIBLE TO BUILD A GLOBAL CRM SYSTEM?**

BERKWITT: I think it's absolutely possible. There are a number of areas that need to be "internationalized." One is the interfaces, which can certainly be tweaked to cater to specific cultural and linguistic needs. But the other important aspect of it has to do with the content itself and whether the content can be properly distinguished between cultures.



ROUNDTABLE MODERATORS Thomas Hoffman (top) and Sarwar Kashmeri

AUSTRIAN: Vendors are making their products increasingly global.

I'm sure that there will be no perfect system for all geographies. The behaviors and norms of business are just too varied, whether it's in India, Israel, Japan or the United States.

So probably there'll be no one-size-fits-all system. But there are definitely global systems today that deal with a great percentage of the demands across geographies, including SAP, Oracle, PeopleSoft and others.

■ **HOFFMAN: DESPITE THE ADVANCES THAT COMPANIES HAVE MADE WITH CRM, ORGANIZATIONS STILL SEEM TO BE STRUGGLING WITH TARGETING THEIR MOST PROFITABLE CUSTOMERS. WHY IS THAT?**

COLE: I worked on a project in the U.K. some years ago for a company that sold electrical and mechanical components out of catalogs. What they did every month was identify the top 10 products bought by each customer and the 10 least-popular products, and theo [they would] transfer this data from the back-office system for use in front-office initiatives.

It was a forward-thinking operation. That is the kind of information we really should be striving toward, but that was only accomplished with very strong analytical tools that were analyzing the back-office data, as well as [by] some forward-thinking executives who knew to look for that information.

GOLDFINGER: First off, it's important to understand all the inputs that are necessary to truly define profitability.

Few systems can give you all the oumbers. This is really why you need fully integrated enterprise solutions that can support complex relationship modeling.

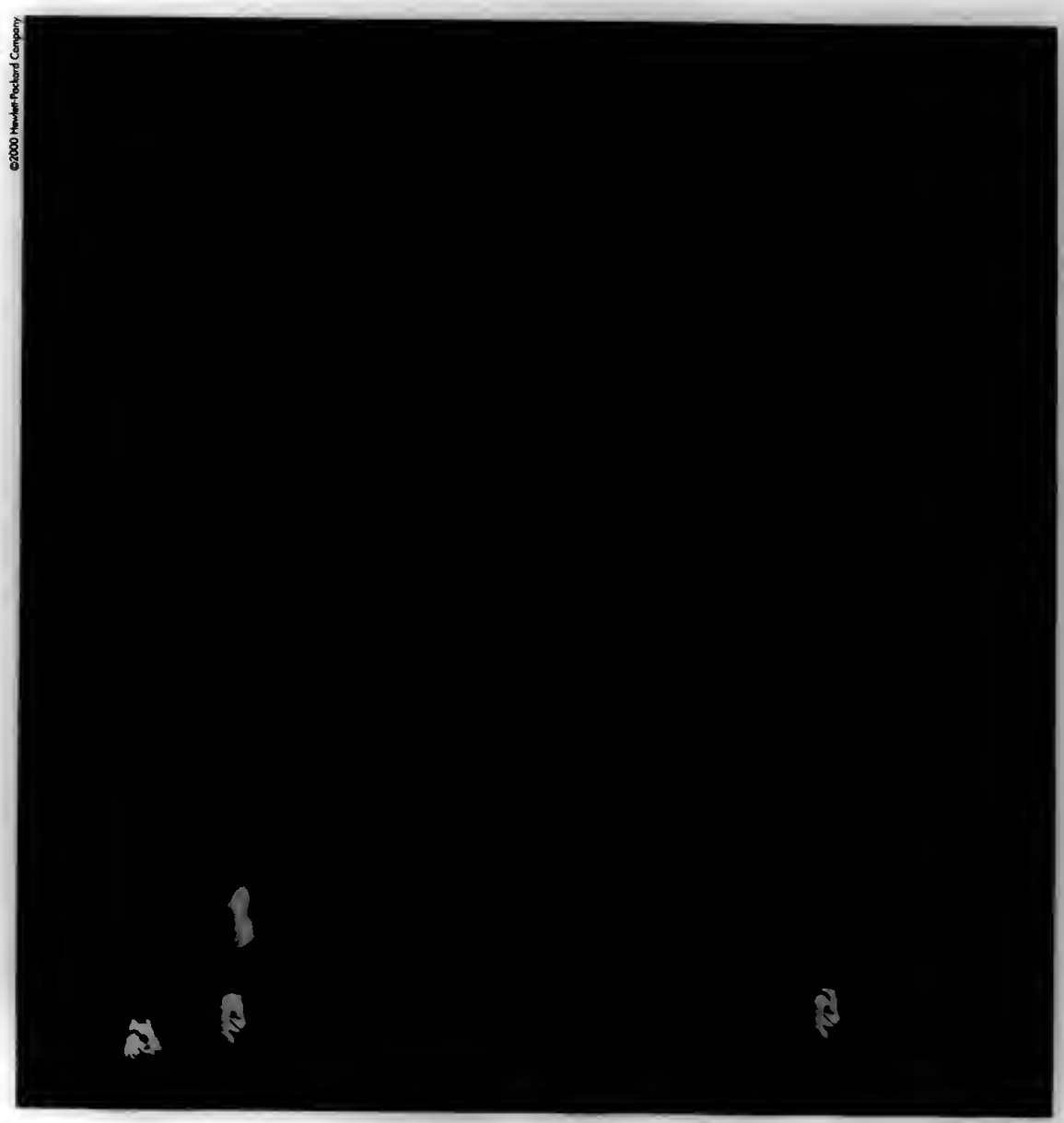
Beyond the obvious profit value based on products purchased, you need to add, at the very least, cost of service [and] future purchase potential as well as the value of references and linkages to other customers. For example, you might not derive a ton of profit from me personally, but I have referred a significant number of customers who have been quite profitable. How should I be treated? ◗

This roundtable is part of an ongoing series developed jointly by Computerworld *and* ebizChronicle.com, *the online daily newspaper of business-to-business e-commerce.*

"To us, CRM has meant better managing our customers and the relationship with them by enabling business information flow, such as pricing, inventory and planning, in both directions.

MEHRDAD LAGHAEIAN, VICE PRESIDENT AND CIO, OSRAM SYLVANIA

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Getting Serious About Sabbaticals

Time was when sabbaticals were difficult to get in IT, even for top brass. No more. Many companies are now using them as recruiting and retention perks, encouraging their most valued staffers to go away. By Melissa Solomon

It wasn't too long ago that sabbaticals automatically conjured the image of college professors toiling away on their latest research.

Well, Michelle Swenson is just one of the scores of high-tech workers breaking the sabbatical stereotype. During a four-week sabbatical this summer, Swenson, a senior vice president at San Francisco-based Charles Schwab & Co., roamed the streets of France with her husband, then returned home to putter around the garden and "just be a mom" to her 6-year-old son.

Schwab is just one of many companies, including American Express Co., Xerox Corp., Wells Fargo & Co. and Kraft Foods Inc., that are offering sabbaticals as part of benefits packages designed to attract and retain employees in today's tight labor market. In a recent interview with Computerworld's **Melissa Solomon**, *Swenson spoke about her own time off and expressed her thoughts on the program as a whole.*

How valuable was the sabbatical to you? It was great. I haven't talked to anyone at Schwab who has been on a sabbatical that hasn't come back and said, "Wow, what a great thing to do." And I think most of us have done very different things. Some people, particularly if they're taking a longer sabbatical, might use them to take a once-in-a-lifetime trip. . . . Lots of people take back-road biking trips and [rent] houses in Europe. . . . But everybody I've talked to has come back feeling, certainly I think, more re-energized, refreshed — more able to sort of just cope with the challenges and stress of a fast-paced company and a fast-paced industry.

How long has Schwab been offering sabbaticals? Schwab has offered a sabbatical program in one form or another for about five years. Starting this year, the sabbatical was revised to really make it more available to all employees. . . . So beginning this year, you were able to get 100% of salary while you were on sabbatical. Prior to that, it was 40%, which would not have made it doable for everybody. . . . It's four weeks of sabbatical for every five years of employment . . . and it was capped at eight weeks this year. And you can also tack on [up to two weeks of] vacation as well.

Any requirements other than length of employment that must be met before taking them? One needs to have received a fully met performance review. And the idea there is that employees who are not performing satisfactorily will probably not be allowed to use this option.



WHO IS SHE?

Michelle Swenson is a senior vice president and chief of staff for CIO Dawn Lepore at San Francisco-based Charles Schwab & Co. She has been with the company for 15 years.

What drove the decision to move to 100% reimbursement? How does Schwab benefit? Well, I think a couple of things. First of all, my guess is that there was a realization that sabbatical programs were growing; they were very popular. Many — particularly technology — firms offer them, so I think part of it was for competitive reasons.

I think there's a growing realization at Schwab about the importance of people taking time off for sort of the regenerative process that goes on. . . . I think there's a real appreciation that allowing employees to take a break, regroup, come up for air, whatever term you want to use, is important. In the long run, it has a positive impact on both the employees' outlook and performance.

David Pottruck, our co-CEO, also took a sabbatical this summer. So I think part of what's been really neat about the program, too, is that you have some very senior people taking sabbaticals, which I think is important because it signals that it's OK to do this.

How do you cover the work when so many people want to take sabbaticals? First of all, these are planned far in advance. . . . Obviously, not everybody can be gone at the same time. And so there's a process that managers go through in terms of when people can be gone. And frequently, somebody is asked not to take a sabbatical at such-and-such a time because somebody else is. . . . When people at the same level both want to be gone . . . theo my understanding is that most frequently, people use things like tenure to break that tie.

So it's very much a negotiated process, and people understand that. And then it's just like anything else. With knowledge in advance that the person is going to be gone, it's no different than, let's say, maternity leave, or something like that, although it's a good deal shorter than most maternity leaves.

Do people take sabbaticals for training or professional growth, or are they intended more as a chance for breathing space? I think the intention is more the latter, a breathing space. . . . I would say Schwab is very accommodating in terms of supporting people who want to take job-related training during their regular workweek. So I don't think Schwab employees are put in a position of having to feel like they have to take a sabbatical to take a course.

Was the sabbatical experience different from that of a typical vacation? I think the big difference is, one, the length. People tend to take two, possibly three, weeks' vacation. . . . So I think for most of us, a four- or five- or six-week — or even longer — sabbatical was possibly the longest amount of time they've taken off other than between jobs or something like that.

Also, because it is something that happens only every five years, I think most of us approached it as something special. To the extent possible, we tried to organize it in a way that we thought it would be most meaningful.

I think the third difference is that there's a real tendency among Schwab employees to check e-mail and voice mail when they're on vacation, especially if it's a two-week vacation. . . . I was not perfect at this . . . but I think a number of people really did take the approach of "I want to totally disconnect." And of course, that's what all of the literature about sabbaticals suggests you do.

Were you worried about leaving for that long a period of time? No. I mean I wasn't worried in the sense that I thought things would fall apart, that there wasn't coverage. And also, I was reachable.

Do you see a difference in the performance when employees come back from sabbaticals? Again, is this something that's measurable in any way? No. But I will say from talking to people, I think most of us come back, and, you know, even if the glow only lasts for two or three weeks, that's a good thing. And I think most of us come back with just a renewed sense of what's important and how to stay balanced. I mean, it's easy even for the most experienced senior manager to get stressed out in our kind of industry and our kind of environment. And I think most people who've taken a sabbatical do come back more resilient.

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E-Metrics

BY STEVE ALEXANDER

EXPERTS HAVE long considered e-metrics to be the key to helping online businesses grow profitably. But during the past year, the most important metrics have shifted from measuring site traffic to focusing on customer retention.

"Last year, everybody was in a rush to get eyeballs to their Web site, and they sometimes were spending absurd amounts of money on branding and advertising. But this year, the mantra is customer reactivation [bringing back former customers] and customer loyalty or retention," says Sam Kapreilian, a partner at PricewaterhouseCoopers in Boston.

The biggest problem with e-metrics is that there are too many areas in e-business that can be measured. Consequently, both IT and business professionals need guidelines about what to focus on, lest they get lost in a flood of e-metric data and fail to spot trends that affect profitability.

Choosing a Metric

Experts recommend focusing on a few key measures such as customer retention or abandonment rates (see chart). Alternatively, e-business executives may want to consider ways to combine several measures into an aggregate metric that can be tracked easily.

As Richard Hunter, managing vice president for consulting at Gartner E-Metrix, a unit of Gartner Group Inc. in Stamford, Conn., points out, "Most people can't monitor 50 things at a time." That's why it's important for e-business leaders to avoid getting drowned in too many metrics "or figure out a way to roll them up into a single number called something like 'customer profitability.' It's better to look at an aggregate metric," Hunter says.

Deciding which e-metrics to use can be difficult. There are traditional business measures that try to quantify business cycle time and inventory management. Then there are technical measurements that attempt to quantify things such as the speed of transactions. There are also Web marketing measurements that center on acquiring and retaining customers.

Hunter says he favors metrics that could apply to traditional businesses as well as e-businesses. For example, he says, e-businesses should measure supplier responsiveness (how quickly and effectively suppliers fulfill agreements), the quality of order fulfillment (the percentage of orders filled correctly) and documentation accuracy.

Hunter also recommends measuring customer responsiveness, or the extent to which an e-business responds to customers by filling orders on time, correctly and with accurate documentation.

What to Look For

These traditional business metrics are more important to e-businesses than measuring the quantity or quality of time people spend on a Web site, Hunter says.

"You can't measure success in cyberspace by the number of eyeballs you attract any more than you can measure success by the number of people looking in store windows on Fifth Avenue," Hunter says. "I would rather look for ratios that tell me what percentage of visitors are converted to buyers."

To measure loyalty, Kapreilian says, he favors tracking the effectiveness of promotional online marketing campaigns by measuring clickthrough rates (how many successive screens of information Web visitors click to reach a particular page). "Measuring the intensity of clickthrough is a big metric," he says.

He says he also favors measuring the abandonment rate of Web site shopping carts.

"We find that a lot of online organizations are now fixated on abandonment rates, with the idea that a simple series of minor changes to the site might bring at least half of those people back," he says.

Boh Chatham, an analyst at Forrester Research Inc. in Cambridge, Mass., says he favors sales-oriented measures such as the number of "proactive touches" with customers. This includes offering customers marketing messages or solutions to problems before they hear about them elsewhere, either by e-mail, direct mail or a phone call.

For example, Chatham points to an acquaintance who recently received a call from a credit card company explaining that an error had caused some customers to be double-billed for a transaction but that the problem was being resolved. Such proactive messages heighten an e-business' image, even if it's about correcting a mistake, he says.

"You want to measure your reactive vs. your proactive touches with customers," Chatham says. "Find out how many times customers contacted the company, forcing the company to scramble, vs. how many times the company contacted the customers."

Chatham also suggests measuring the number of self-service interactions customers conduct on a Web site, compared with their total number of direct interactions with a company. "Often, self-service is better than human-aided service, and it costs less," he says.

Hunter says he anticipates that e-metrics for security and privacy will become increasingly important.

"We might measure the resistance of the Web site to an outside assault, or the resistance of a database to unauthorized intrusion," Hunter says. "These things are not all that difficult to quantify, because the means hackers use have been well documented."

Alexander is a freelance writer in Edina, Minn. Contact him at sorion99@aol.com.

DEFINITION

E-metrics are business or technical measures of e-business performance. Business metrics include the percentage of e-commerce orders filled correctly and Web-only measures such as conversion and abandonment rates. Technical metrics focus on the capabilities of a Web site, such as its ability to handle a specific volume of traffic.



SOURCE: METRICUS CORP., CAMBRIDGE, MASS.



"You can't measure success in cyberspace by the number of eyeballs you attract."

RICHARD HUNTER, MANAGING VICE PRESIDENT FOR CONSULTING, GARTNER E-METRIX

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

JOE AUER/DRIVING THE DEAL

Finding the Truth Behind Vendor's Offer

A RECENT VOICE communications services deal proves that if a vendor's proposal sounds too good to be true, it probably is.

The vendor touted an 18% discount for some voice communications services. The proposal was part of a new program that consolidated a variety of services into a single offering. All the customer had to do was sign up for a three-year commitment. On the surface, it seemed like a great deal because the customer was already purchasing these services from the vendor. The discount was being pitched as a concession just for signing up for three years.

Yet, as in many too-good-to-be-true deals, "buyer beware" became the concern as the deal unfolded. It was discovered that the vendor had misrepresented the discount, hoping to snag an unsuspecting customer into a longer deal resulting in more total revenue.

Dissecting the proposal, the customer found the following "gotchas":

- The 18% discount applied only to certain services. In addition, some services included in the minimum revenue commitment were exempt from the discount. When the whole revenue commitment was considered, the discount was significantly less than the touted 18%.
- There were heavy termination and "adjustment" charges if the customer failed to make the contractually committed revenue.
- The vendor's form contract severely limited its total liability, while the customer's liability wasn't subject to any limitations.

But because there still were some significant savings to be had, the customer decided that if the vendor was willing to negotiate some concessions to make the deal more palatable, the customer would probably go ahead and realize the savings. Negotiations proceeded.

Going forward, everybody understood that the true discount was a lot less than 18% when the total commitment was considered. Since the vendor's misrepresentation had been exposed and the vendor duly chastised, the customer gained some negotiating power, and the vendor gained some humility.

Contract language was added to address changes in the customer's business conditions. For instance, in the event of a downturn in the customer's business, termination charges would be eliminated and the contract deal could be downsized without any adjustment charges.

The liability limitation was made mutual. The vendor was initially reluctant to grant this concession. But the customer stressed the issue of fairness and, after reflection, the vendor agreed. (It's a very effective negotiating tactic to suggest that the one-way boilerplate provisions in a vendor's form contract be made mutual.)

The total revenue commitment period was shortened from three years to two. The commitment level was carefully reviewed to make sure the customer could deliver the money to the vendor.

In the end, the customer got a fair deal and an additional discount in return for only a two-year revenue commitment. So when deals that are too good to be true appear, dissect them, fix the flaws and — only then — sign on the dotted line.



JOE AUER is president of International Computer Negotiations Inc (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

Mail Bag

Phil Deatherage from Symcas-TSG, an IT outsourcing company in Fullerton, Calif., writes: *You seem negative on outsourcing, yet we have had great success. We have several cities, fairgrounds, performing arts centers, water districts and the like where many functions are outsourced to us.*

One of our highest-profile clients is Commonwealth Energy in California, a small broker company that entered into the deregulation energy market in the state. We were its outsourcing partner for programming and MIS support.

We programmed all the billing software, installed all computer hardware and set it up so it's now California's largest deregulated energy supplier, larger than all the others combined.

What's interesting is that no other utility has been able to achieve the same level of sophistication. Commonwealth Energy has now entered the Pennsylvania deregulation market (as Electric America), and we project that in six months, it will be the largest deregulated energy supplier in the nation.

In this case, outsourcing computer development pushed a small company into the top tier of deregulation energy success. So outsourcing sometimes does work.

Thanks, Phil. It's always great to get some good news about "outsourcery." Keep up the good work!

BRIEFS

San Jose, Seattle Top Cybercities List

San Jose has more high-tech employees than any other U.S. metropolitan area, while Seattle tops the list of cities with the highest software development revenues, according to a recent study by the Washington-based AeA (the former American Electronics Association) and Nasdaq Stock Market Inc.

San Jose earned top honors with 252,900 high-tech workers, followed by Boston with 234,800 and Chicago with 180,400. Seattle, meanwhile, saw its average high-tech wage level in 1999 hit $129,300, thanks largely to the healthy software industry there. That wage level was 50% higher than San Jose's average high-tech wage of $85,100.

Online Real Estate Firms Team Up

MortgageRamp, an online commercial real estate community based in Charlotte, N.C., and New York-based GlobeSt.com LLC, a Web site for commercial real estate professionals, have joined forces. GlobeSt.com will provide MortgageRamp users with industry news from its network of reporters within 25 markets across the U.S.

Measuring IT Investments

Giga Information Group Inc. in Cambridge, Mass., recently launched a service to help companies determine the value of their investments in technology and technology services.

The service, called Total Economic Impact, will examine costs, business benefits, future needs, potential return on investment and risk. The cost of the service will vary.

Compaq Arms Mobile Workers With Centura

Centura Software Corp. in Redwood Shores, Calif., announced last week that it will provide its mobile applications software to Compaq Computer Corp.'s iPaq Pocket PCs. The Centura software was designed to provide mobile workers with secure, real-time connections to data within enterprises, including customer information.

SNAPSHOT

IT Meets Business

IT initiatives are moving away from IT departments and into the hands of senior managers.

Where IT initiatives originate:	
Within IT	61%
Senior management	46%
Business operating units	46%
Marketing/sales	30%
Finance	9%
Other	2%

(Note: Survey respondents could choose more than one answer.)

Where e-business initiatives originate:	
Within IT	22%
Senior management	30%
Business operating units	20%
Marketing/sales	9%
Finance	2%
Other	4%

(Note: Survey respondents could abstain from choosing any category.)

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TECHNOLOGY

HACK OF THE MONTH

A year after a well-publicized spate of viruses raced through the cyberworld, variants of the bugs are still turning up in e-mail in-boxes. What are the short- and long-term answers to the virus threat? » 68

FORD TAPS TALLY

Ford is wrapping up testing before it implements Tally System's TS.Census asset management software for 100,000 desktops worldwide. » 69

SECURITY JOURNAL

The legal department puts an end to our security manager's efforts to track users who are surfing porn sites on company time. The rationale? If you don't know about it, you can't be held liable. » 71

HANDS ON

In this quick look at what you need to think about when specifying PC components and systems, reviews editor Russell Kay highlights some innovative options and parts. Would corporate IT be better off if it let users choose — within reason — hardware and software they're comfortable with? » 72

FORECAST FOR THE NETWORK

Corporate networks will demand increased bandwidth to support applications such as enterprise resource planning, video and transmission of fat engineering files, but network managers say they expect price and performance to surpass Moore's Law. Network managers also see widespread use of more tightly integrated wireless systems, from the delivery truck to the factory floor. » 76

QUICKSTUDY

Three-dimensional graphics are images that, though shown on a 2-D computer screen, can be manipulated in 3-D. The viewer can "move" around the image and change the apparent viewpoint as if it were a real object in space. A 2-D image can seem to have weight, reflectivity, texture and depth, but it remains frozen in time and space. So how do 3-D graphics work? Find out in our quick primer. » 80

EMERGING COMPANIES

E-RMA's hosted service automates the repair-and-returns process, giving customer service a boost. E-RMA touts substantial cost savings, but its challenge is to persuade IT managers to see it as more than a stopgap service. » 81

JOB WATCH

Java object-oriented engineer Sloan Seaman has learned to just say no when it comes to unreasonable users. If developers aren't careful, they can be easily burned out by clients' demands, he warns. » 82



MONKEY BUSINESS AIDS RESEARCH

RESEARCHERS HAVE SUCCESSFULLY used an owl monkey's brain waves transmitted over the Internet to move a robot's arm 600 miles away. The scientists' work may signal dramatic new possibilities for the human/machine interface. The race is on to develop technologies that allow humans to control machines by simply thinking about them.

74

DEBORAH RADCLIFF/HACK OF THE MONTH

Virus Vigilance

IT'S BEEN NEARLY A YEAR since "I Love You" struck, but variants of this self-replicating virus still find their way into my mailbox — enough to cause a nuisance. The most recent, EIGO.BMP.vbs, came from a security vendor just two weeks ago.

Seems as though a new variant hits every day. Just in the past two weeks, a plethora of new viruses were reported, including variants of Romeo & Juliet, Navidad, Afeto and Shockwave. Like Melissa and I Love You, they all take advantage of desktop mail programs to spread and their close relationships to other applications to act up.

"We'll see more viruses with more frequency in 2001, partly because they're so easy to write and edit," says Ian Poynter, president of Jerboa, a security consulting firm in Cambridge, Mass. "I think we'll also see more of these viruses carrying a payload and not just propagating themselves. This will make for more infections that are more serious."

The problem with today's viruses is twofold: Not only can they be easily rewritten to change their signatures and bypass antivirus tools, but they are also tempting attachment types for click-happy users who see nothing wrong with opening mail attachments from trusted sources.

No matter how often you tell users not to open executables with file extensions like .exe, .vbs (Visual Basic scripts), .url or .wsf (Windows script files) and other executables including music or video attachments, they will still succumb to temptation, says Bruce Moulton, vice president of infrastructure risk management at Fidelity Investments in Boston.

"Training is not enough. You also need a technical solution," says Roland Cuny, chief technology officer at Webwasher.com, an Internet content filtering vendor and a division of Siemens.



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That's why Moulton decided to set up filters to block executable attachments before they get to desktops. Blocking file types known to carry viruses and Trojan horses (hidden programs) may sound extreme. Moulton, however, first reviewed how his company uses these file types. Once be determined that these attachments weren't even used for business purposes, making the decision to block them was easy. "The business impact of shutting out these file types is zero because 99.9% of these attachments that come in are for personal viewing, like animated Christmas cards, movie clips, things like that," he says.

Microsoft's Outlook 2000 e-mail security patch was designed to filter a number of executable file types from tbe Outlook program.

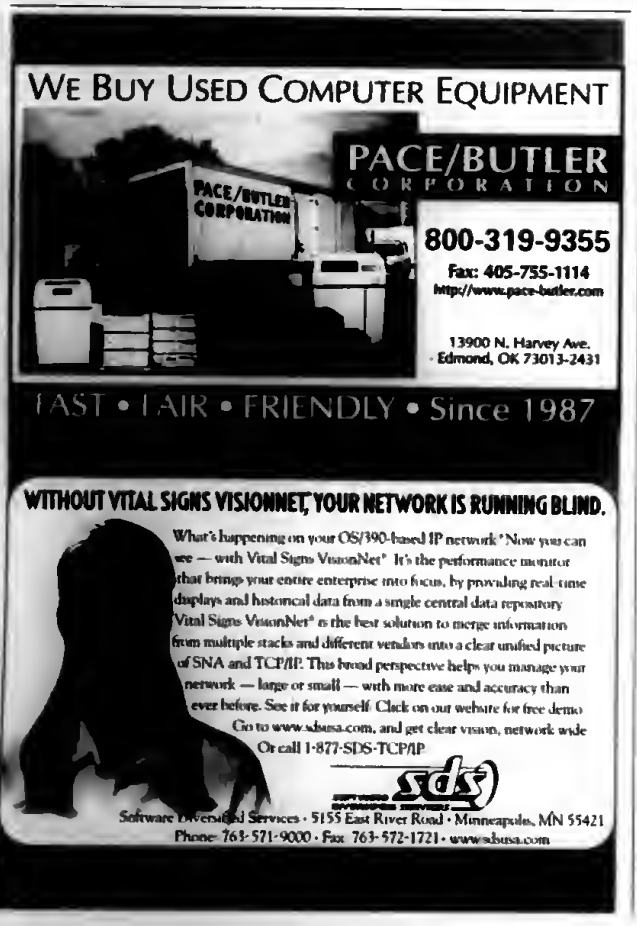
In addition, a number of vendors market filtering products that can effectively block custom-specified file types and eveo subject lines (like "I Love You" or "Check this out") at the mail gateway — before they get inside the enterprise. A short list includes Baltimore Technologies' MIMEsweeper and Mailsweeper, Symantec's Mail-Gear, SurfControl's SuperScout, Elron Software's Message Inspector, and Tumbleweed Communications' e-mail filtering products.

Many of these companies also offer Web site filtering, as Webwasher does, to prevent certain file types from activating on a browser.

Besides filtering, be diligent with your antivirus software updates. My antivirus software caught the virus that came from the security vendor.

These viruses haven't delivered any seriously damaging payloads so far. But such viruses have ended friendships, lost customers forever and spread bad karma, according to postings at About.com.

So keep your antivirus software up to date, educate your users and block those executables at the gate. And hope your remote users aren't replicating viruses off-site, since their systems aren't protected by tbese enterprise filtering tools.



Dell Offers Enterprise Servers

Targeting corporate users

BY LINDA ROSENCRANCE

Dell Computer Corp. last week announced a series of new servers in a bid to broaden its appeal to corporate users.

Round Rock, Texas-based Dell said it's aiming to beef up its products' ability to run internal and external Web sites as well as high-end database applications and other corporate processing jobs. Among the moves detailed in the announcement is the planned addition of a 32-processor server made by Blue Bell, Pa.-based Unisys Corp. that Dell will market for use in applications "that require significant computing horsepower," said Michael Lambert, senior vice president of Dell's enterprise systems group.

Dell becomes the fourth server vendor to sign on to resell Unisys' ES7000 machine, which is currently the only system that can take full advantage of the 32-processor scalability built into Microsoft Corp.'s new high-end Windows 2000 Datacenter operating system. Hewlett-Packard Co., Compaq Computer Corp. and U.K.-based ICL, a subsidiary of Tokyo-based Fujitsu Ltd., all previously announced plans to offer the ES7000.

Dell, which will market the ES7000 under the PowerEdge brand name, said it plans to make the 32-processor system available in the first quarter of next year. Pricing nn the machine wasn't disclosed.

Dell also announced two new rack-mounted servers targeted at Internet and intranet applications. The PowerEdge 1550 is due to ship next month at a starting price of $2,599, and the PowerEdge 350 is slated to be available in February with a base price of $1,499.

Ford to Deploy Tool for Asset Management

BY SAMI LAIS

Ford Motor Co. will begin deployment next month of Tally System Corp.'s TS.Census asset management software for its 100,000 desktops worldwide.

Testing will wind up this month and deployment will take an estimated five to six months, said Arun Kant, who took over last month as director of infrastructure technologies and security at the Dearborn, Mich.-based automaker.

TS.Census' support for TCP/IP as its native communications protocol lets network administrators scale up the number of remote servers they can easily network.

TS.Census is the newest version of the software Lebanon, N.H.-based Tally previously called NetCensus. The new version adds dozens of new report templates, flexible scheduling of events such as software updates and a query tool that's scalable from a standalone workstation to groups of PCs.



KANT: Deployment will take five or six months.

Ford will use the software to automatically detect hardware and software on its network of 80,000 desktops in the U.S. and another 20,000 worldwide, said a Ford spokeswoman. Ford will feed inventory data acquired using TS.Census into its existing asset management system, she said.

"Through 2004, enterprises that implement a managed procurement process will lower acquisition costs by 5% to 8%, reduce time for implementation by 30% and experience half the new technology and process implementation failures," said Patricia Adams, and analyst at Gartner Group Inc. in Stamford, Conn.

"If you don't have an end-to-end asset management program, you're spending a lot of money you don't need to spend," said Shaun Brachmann, network administrator at plumbing-fixture maker Kohler Co.

Brachmann led the team that implemented TS.Census for the 5,300 desktops at his company's Kohler, Wis., headquarters. "Planning annual budgeting — that's [TS.Census'] most basic function," he said. "There's a million other things it does, but when you're trying to justify it [to management], that's the one that hits them on the head like a hammer."

Asset management isn't glamorous, said Dennis Drogseth, an analyst at Enterprise Management Associates in Boulder, Colo.

"But if you have a good system in place . . . it enables other functions such as problem solving, performance monitoring and managing your IT investment."

Tally's competitors include Peregrine Systems Inc. in San Diego and Remedy Corp. in Mountain View, Calif.

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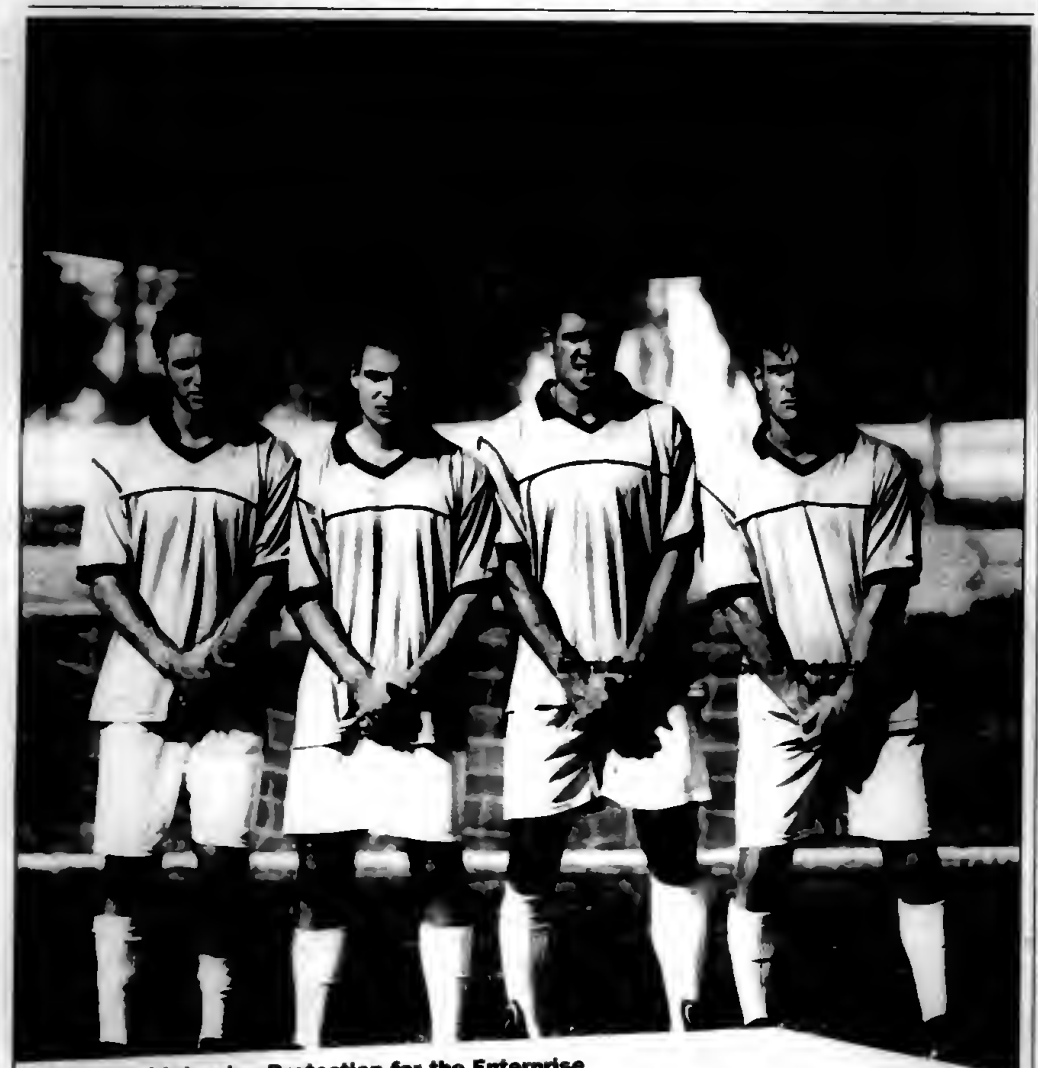
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NetIQ Security Software Debuts

Santa Clara, Calif.-based security vendor NetIQ Corp. last week released its new Security Manager software, combining intrusion detection features with vulnerability assessment capabilities.

The software lets companies do real-time threat management, automated incident response, auditing and reporting, and security event log consolidation, according to NetIQ. In addition, it can automatically take action against users, such as denying service, in response to suspected security violations or anticipated threats, the company claimed.

The software is priced at $50 for installations on Windows NT 4.0 Workstation and Windows 2000 Professional; $800 per Windows NT 4.0 Server and Windows 2000 Server; and $1,500 per Windows 2000 Advanced Server.



EarthLink Rolls Out Wireless E-Mail

EarthLink Inc. in Atlanta, the nation's second-largest Internet service provider, last week launched a wireless e-mail service via two wearable two-way wireless handhelds from Research in Motion Ltd. (RIM) in Waterloo, Ontario. The unlimited e-mail service costs $39.95 per month for subscribers and $10 more per month for nonsubscribers. The RIM handhelds can be worn on a belt with a clip. The pager-size RIM 950 sells for $399, and the palm-size RIM 957 handheld is priced at $499.

FedEx Selects NCR Teradata

FedEx Corp. in Memphis has installed a data warehousing system from NCR Corp. in Dayton, Ohio. According to FedEx, the NCR Teradata Warehouse allows FedEx to make faster business decisions by providing an enterprisewide view of each customer's contact with the shipping company. The multiterabyte system, based on NCR's Teradata database, includes NCR software and hardware, as well as consulting and support services.

Code for AbsoluteX Linux Tool Kit Released

Epiera in New York has announced the AbsoluteX open-source X Window System developers tool kit for creating customized graphical user interfaces for Linux users, particularly future home users. The code, which can be downloaded for free at *www.absolutex.org*, is based on the C++ programming language.

Navy Launches New Computing Center

The U.S. Navy last week officially opened its new high-performance computing center at Patuxent River, Md. The center was built during the past year under the U.S. Department of Defense's multibillion-dollar High Performance Computing Modernization Program. Powered by Silicon Graphics Inc. machines, the center's systems will run high-end applications such as computational fluid dynamics, computational electromagnetics and acoustics, and graphics and signal processing.

Porn Surfing Endgame: Ignorance Is Bliss

Jude stops his tracking program in response to this legal advice: What you don't know can't hurt you

HERE'S THE ostricb principle of problem resolution: Stick your head in the sand and shout, "I can't see any problem!" uotil it goes away. It's childish. Ineffective. Unprofessional. And highly recommended by our legal department, it seems.



Security Manager's Journal

As regular readers will know, we had a problem some time back with employees surfing pornographic Web sites from work. That may just be a productivity problem in some places, but in the country wbere I work, it's actually illegal.

I'm not concerned with the morality of the situation. I couldo't give two boots about the lost productivity — that's a management problem. But I am concerned that people are breaking the law from their desks.

We put together a simple script to scan the Web proxy logs and report any links to pornographic advertising companies and adult traffic-counting services. This may seem like an odd way of doing it, but while porn sites come and go, the ancillary services like advertising and traffic analysis seem to stay put. That means it's easier to track the services than it is to track the sites themselves.

Anyway, we started to run our script regularly and found quite a few regular porn surfers.

The Rationale

This week, I got an urgent edict from our buman resources department, cc'd to a few people high up in my management chain. The log scanning must stop. I was told that they mean *now*.

This edict seems to originate from the legal department. I will try to summarize the argument, but I doo't really understand it myself. It goes something like this: If a random employee surfs porn from a company machine, be is downloading obscene .html files and storing them on company disks. This can cause an atmosphere of harassmeot that might harm female employees.

It may also be against our local obscenity laws to view this stuff: I'm not sure on this, as I once tried to understand the legislation but quickly got lost in the legal jargon. However, I'm pretty certain that it is against our obscenity laws to publish this pornography, and by storing the files on behalf of the employee (on his hard disk) and making them available oo demand, the company can be held to be a publisher.

So the company has a duty to stop this from happening. If we can show that we're taking reasonable steps to prevent it, we might have a valid defense if we were ever prosecuted for it. We also have to do it reasonably well: If we make a vague, halfhearted attempt at stopping it but give up as sooo as things get a bit difficult, then our defense wouldn't be terribly valid. All this sounds reasonable so far.

Where it gets bizarre is that our buman resources department believes you can't be beld liable for publication if you doo't know it's happening. This sounds a bit dodgy to me, but then I'm no legal expert. So they have two choices: Do something about it and do it reasonably well, or claim that you never knew it was going on in the first place.

Obviously you can't really claim that you don't know it's going on if some uncooperative IT staffer keeps sending you weekly statistics. Hence the message: Stop scanning now!

Of course, I still know it's going on — can I be held liable?

Thievery Strikes

On a completely unrelated topic, we got hit by thieves a few weeks ago. These were highly professional thieves — they knew exactly which pieces of hardware they were after, where they were and how to get to them. The hardware in question was processor boards and memory chips, which are worth far more than their weight in gold.

The thieves broke into our disaster recovery site, stole the hardware and left. There were two guys — we have them on camera. We beefed up our security at our disaster recovery site. They came back the following week and broke into our main office. We beefed up the security at our main office. They came back tbe following week — armed and en masse, this time — and broke back into the disaster recovery site and did it all over again. At this point, I'm extremely glad that pbysical security isn't my responsibility.

If Casinos Do It, Why Can't We?

What interested me is that the police knew all about the attacks. We weren't alone: There have been more than 20 attacks within a few miles of us over the past few months, all after the same type of hardware. They even told us, off the record of course, the names of a few of the other companies that got hit. I know the security managers at these firms, but none of them will talk. My own management seems extremely reluctant to discuss the issue in public. The police sent around a terse warning, but there were no details, so nothing to go on.

I did eventually talk to one of the other security managers. He'd been hit once; hopefully, our experience might help him prepare in case the thieves try to strike there again. But still nothing but silence from the others.

One of my colleagues at another company gives presentations to organizations on recent IT security attacks. Much of the material is "sanitized," so there's not much danger of revealing any sensitive information about his company, and it's interesting and helpful to see exactly what goes on at other sites. There's no shortage of consultants to tell you that this sort of thing is going to happen, but consultants usually try to sell their services to deal with the problem.

This colleague justifies his presentations by arguing that if the informatioo helps us catch someone trying to break into our site, then there's one less person out there to break into his site.

The counterargument is that we all compete: Why should we share information? Well, I'm told that if you're thrown out of one Las Vegas casino for cheating, your photo is uploaded to its face recognition system, so you'll be spotted instantly if you try to come back another day. To make things harder, all the casinos share the data in their face recognition systems with one another. If you get thrown out of one casino and walk into another, they'll be ready for you.

Las Vegas casinos compete — vigorously. If they can share security information that well, why is it so hard for the rest of us? ◗

SECURITYBOOKSHELF

Starting this week, I'll give my thoughts on books on security topics as I find time to read them. Your comments are welcome in the online Security Manager's Journal forum. To join, go to the **Security Community** page at *www.computerworld.com/security*

Secrets & Lies: Digital Security in a Networked World, by Bruce Schneier (John Wiley & Sons, 2000) Schneier's earlier book, *Applied Cryptography*, is the most popular crypto textbook I've seen, and rightly so. This book carries on the tradition by being extremely readable and well argued. *Secrets & Lies* addresses security from a much higher level than Schneier's previous book and gives a good explanation of many of the strategic decisions any security manager needs to make. I'd recommend this to anyone interested in security

LINKS:

The links below point to Web sites with useful information on physical security. Much of the information focuses on high-level considerations, however

www.ncsa.uiuc.edu/people/ncsairst/policy.html
Here is a security policy paper from the National Center for Supercomputing Applications that includes recommended physical security restrictions.

www.microsoft.com/technet/security/datavail.asp
This white paper from Microsoft's Technet service includes some practical basics on physical security

www.dsd.gov.au/infosec/acsi33/06annexa.html
This link includes information on physical security standards used by the Australian government for levels ranging from restricted to top secret.

www.boran.com/security/
This Web page from a Swiss consultancy includes a checklist of physical security requirements.

■ This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager – let's call him Jude Thaddeus – better solve security problems. Contact Jude at jude.t@lycos.com or click on *Computerworld.com*'s Security Watch community forum to participate in discussion topics.

Selecting PC Components

IT departments buy identical PC systems in large numbers, but one size never fits all. Give some thought to alternative specifications. By Russell Kay

Most IT organizations are concerned that PC systems be as identical as possible, down to the make and model of specific component parts such as video and network cards. It's effective, efficient and inexpensive. It considerably simplifies support, though it assumes that all users can be satisfied by the same computer.

It's hard to imagine big companies working any other way. Certainly, a few large companies will take the time to build their own computers. That wouldn't be cost-effective, but it might work better for a significant percentage of users.

The fact is, one size doesn't fit all, and that's just as true for computers as it is for clothing. Consider three factors:

First, different people use different software. For example, a person working with graphics or spreadsheets needs a large, high-quality monitor.

Second, some people have physical restrictions that affect their computer use, whether it's a blind or paraplegic user or someone with other special needs.

Finally, people work in wildly different environments, in which lighting or equipment placement may be restricted, making some systems hard to use.

So, having a single standard computer configuration may make life easier for IT management but harder for users.

Do-It-Myself

The importance of options was impressed upon me recently while I was building a computer. I do this every year as a way to stay on top of developments and trends in peripherals and components ... and to keep myself hooest.

Instead of assembling a system based primarily on price and whatever components were available at a particular computer show, I chose to maximize the user experience and ergonomics and minimize the computer's intrusion.

By looking at these options, I hope to provoke IT departments into considering more than just RAM, hard-disk space and screen size.

Tower case. What guided this year's project was a tower case designed to be quiet. We're surrounded by constant, machine-generated background noise, from the buzz of fluorescent lights, the whoosh of heating ducts and the high-pitched whine of electronics to the roar of computer-cooling fans. Noise is a problem, and computers add to it, but it doesn't have to be that way.

The computer housing, called the Silent-PC, is made in Germany and is distributed by SP North America Inc. in Ann Arbor, Mich. (*www.sp-usa.com*). How quiet is quiet? The Silent-PC case is rated at 21.5db to 24db — quiet enough for a live broadcast studio.

I had a long talk with Thomas Schramm, president of SP North America, about what makes this case so quiet. The answer is a lot of original thinking (some of it patented) and careful selection of components. The power supply's fan, for example, was redesigned by a turbine engineer.

This is the best-made case I've ever used. Besides using sound insulation and vibration-damping materials, the case features interlocking metal plates and fingers that provide radio frequency shielding that's so good the manufacturer guarantees compliance with the Federal Communications Commission's strict Class B requirements.

Yes, at $149, the Silent-PC is four times the cost of a standard case and power supply, but it works exceptionally well. An IT department needing machines for use in radiation-sensitive areas or low-noise environments should check it out.

Motherboard and CPU. Taking Schramm's advice, I opted for all of SP North America's recommended components, starting with a D1184 motherboard from Fujitsu Siemens Computers GmbH in Munich, Germany. On it, I installed a 1-GHz Pentium III CPU provided by Intel Corp., along with a massive heat sink and a Panasonic Panaflo cooling fan. The motherboard regulates this fan's speed, and I can't hear it running.



THE SILENT-PC housing keeps PC noise at 21.5db to 24db.

This was the most complete motherboard I've encountered to date. It uses the Intel 815 chip set for built-in, high-resolution video, audio and Ethernet. In fact, if I hadn't installed a separate graphics card, I'd have a system with *no* added cards, leaving five open Peripheral Component Interconnect slots and one Accelerated Graphics Port slot for expansion.

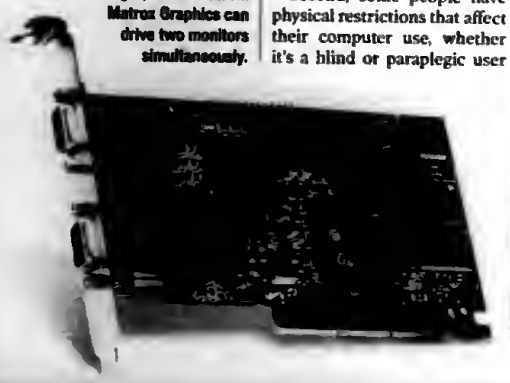
That's remarkable compared with my current system, in which every single slot is filled. If I want to try something new, I have to take out something else. This motherboard might be a good choice for an IT development group, for which flexibility and expandability are the rule.

Memory. Since I was planning to run Windows 2000 on this system, I opted for 256MB of PC-133 synchronous dynamic RAM in the form of one dual in-line memory module, supplied for the project by Kingston Technology Co. in Fountain Valley, Calif. There are enough bad, counterfeit and mismarked memory chips floating around that it makes no sense to take chances with off brands.

Storage. The system has a low-noise 20GB hard drive from Fujitsu Computer Products of America Inc. in San Jose. While it might not be sufficient disk space for a graphics professional, it should keep me going for quite a while.

For the CD drive, I chose a $279 CD-RW drive from Teac America Inc. in Montebello, Calif., rated at 12X writing, 10X rewriting and 32X reading. I've been burning a lot of CDs recently, and I expect to appreciate the ability to write a full 650MB CD in just six minutes. This Teac unit was the first to appear at this speed, but others are now available.

Graphics. The motherboard has onboard graphics good for up to 1,280 by 960 pixels at 16 million colors (or 1,600 by 1,200 pixels at 256 colors). I augmented this with a Millennium G450 graphics card from Montreal-based Matrox Graphics Inc. that can drive two independent monitors simultaneously.



THE MILLENNIUM G450 graphics card from Matrox Graphics can drive two monitors simultaneously.

I'll be temporarily using this system with two 18-in., flat-panel monitors, loaned for review by Netherlands-based Royal Philips Electronics NV and Walnut, Calif.-based ViewSonic Corp. That's a dream combination (though pricey). But with, say, two less-than-$400, 19-in. CRT monitors, the double display becomes affordable.

I'd like to propose that IT departments create a set of options and let each user choose from it, offering help and advice as needed. This would keep IT in control of what components are allowed, making support more manageable, and give users a real stake in their machines and the knowledge that IT is in their court.



Monkey Think, Robot Do

Researchers have successfully transmitted brain waves from an owl monkey over the Internet to move a robot arm 600 miles away. By Jan Matlis

EARLIER THIS YEAR, brain signals from an owl monkey in a North Carolina laboratory were transmitted over the Internet to Massachusetts, where the impulses were used to manipulate a robot arm.

That long reach by one small primate, the result of work done by a collaboration of neurobiologists and computer scientists, may signal dramatic possibilities for the human/machine interface.

One primary goal of Miguel Nicolelis, an associate professor of neurobiology at Duke University; Mandayam Srinivasan, director of the Laboratory for Human and Machine Haptics at MIT; John Chapin, a researcher at the State University of New York Health Science Center at Brooklyn; and their teams is to develop technology that will enable people to control prosthetic devices with their minds and the aid of some computational device. Their work may also have wider application, giving embedded processing an entirely new meaning.

"It was an amazing sight to see the robot in my lab move, knowing that it was being driven by signals from a monkey brain at Duke," said Srinivasan. "It was as if the monkey had a 600-mile-long virtual arm."

In the experiment, electrical signals were picked up by arrays of as many as 96 tiny electrodes implanted in the cerebral cortexes of the two monkeys. The signals were processed to find signatures representing the initiation of movement. As the transmitted signals were detected in real time, 3-D instructions were given to a robotic arm to move accordingly.

When the instructions were sent over the Internet from Duke to MIT, despite the possibility for packet delay, the robotic arm faithfully produced the correct motions.

Trained Monkeys

For two years, the owl monkeys had been trained to reproduce small reaching tasks so that their brain activity during specific motions could be studied and a variety of predictive algorithms examined. A simple, linear algorithm was found to work as well as more complicated ones. By using a weighted average of the number of impulses measured by each electrode over the previous second, Nicolelis' team was able to find characteristic signatures for the initiation of motion.

Continually updating their averages and the weights used to produce them, the team was able to correctly predict the speed and direction of the monkeys' arms.

Nicolelis and his team were surprised by their results. "We found two amazing things," said Nicolelis. "One is that the brain signals denoting hand trajectory show up simultaneously in all the cortical areas we measured."

That means that not only the motor cortex, which is thought to be mostly responsible for motion, but also other regions of the brain are involved in the initiation of movement.

"The second remarkable thing," said Nicolelis, "is that the functional unit in such processing does not seem to be a single neuron. Even the best single-neuron predictor in our samples still could not perform as well as an analysis of a population of neurons."

Another significant result was found in a prior study with rats, whose brains were also implanted with hollow electrodes, no larger in diameter than a human hair.

"We found that rats were able to use their neuronal population activity to control a robot arm, which they used to bring water to their mouths," said Chapin. "At the beginning of the experiments, the animals had to press down a lever to generate the brain activity needed to move the robot arm. After continued training, however, their lever movements diminished while their brain activity remained the same."

In other words, the rats were able to think about wanting water and pressing the lever in order to induce a machine to deliver it to them.

In the same way that sound waves can be characterized so that an automatic attendant can understand a bit of human conversation, it may be possible for a robot with a correctly programmed microprocessor to understand which movements it should initiate.

"One most provocative and controversial question," said Nicolelis, "is whether the brain can actually incorporate a machine as part of its representation of the body. I truly believe that it is possible. The brain is continuously learning and adapting, and previous studies have shown that the body representation in the brain is dynamic. So if you created a closed feedback loop in which the brain controls a device and the device provides feedback to the brain, I would predict that as people or animals learn to use the device, their brains will basically dedicate neuronal space to represent that device."

> It was an amazing sight to see the robot in my lab move.
>
> MANDAYAM SRINIVASAN, DIRECTOR, LABORATORY FOR HUMAN AND MACHINE HAPTICS, MIT

Nicolelis intends to begin examining that question by providing feedback to experimental animals both visually and as pressure on their skin.

He has also proposed creating two types of dedicated neurochips. One, called the data acquisition neurochip, would be used to acquire, filter and digitize data from as many as 1,000 cortical motor neurons. The second neurochip in the chain would integrate signals from all the neurons and pass the information to a microprocessor, which would translate the information into robot trajectories.

Through the mediation of a computer, or some kind of computational chip, it looks as if the race is on for people to control machines just by thinking about them. Telekinesis, that staple of science fiction, may be just around the corner in the wireless world. ◗

Matlis is a freelance writer in Newton, Mass.



AN OWL MONKEY'S brain signals were transmitted over the Internet from North Carolina in order to move a robot arm in Massachusetts. Eventually, people could use this technology to move prosthetic devices.

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Future c

Wired and wireless links have to be fatter to support ERP, video and other high-demand applications. But three years from now, they may be so integrated that you'll be able to check the progress of a car on a production line from a PDA in an airport without thinking about whether you're wired, wireless or optical. By Bob Brewin and James Cope

GLOBAL CORPORATE networks might be turning the planet into a very small business world, but if they're going to live up to the demands of the next generation of Internet applications, they're going to have to make a quantum leap in capacity.

Demand for wideband networks to support applications such as enterprise resource planning (ERP) systems, digital video and the global transfer of "fat" files such as engineering and design data will overwhelm those that don't evolve rapidly over the next several years, according to company network managers, analysts and telecommunications providers.

The growing demand for bandwidth is also driven by the transition of the corporate network from an in-house utility to a primary tool for communication with suppliers and customers via portals, the Internet and intranets.

The need for access to just-in-time information as a competitive tool also seems likely to drive deployment of wireless networks everywhere, from the factory floor to the delivery truck.

General Motors Corp., for example, anticipates that high-bandwidth functions, such as the exchange of engineering data over corporate intranets, could easily drive the capacity of portions of the global network backbone from 1G bit/sec. to 10G bit/sec. over the next two to three years.

At the other end of the spectrum, the Detroit-based automaker says it believes there is a huge potential for the use of much lower-bandwidth wireless networks on the floors of its factories to track the flow of parts and car and truck modules through its assembly plants, according to Arvind Sabbarwal, the company's director of telecommunications and networks.

Delphi Automotive Systems Corp. in Troy, Mich., spun off as an independent company by GM last year, has started deploying a multimegabit global backbone to the 40 countries in which it operates. One of its challenges during the next two to three years will be to figure out how to hook rapidly proliferating handheld devices, such as personal digital assistants from Santa Clara, Calif.-based Palm Inc., into that network in a coherent and secure fashion, according to Gary Roberts, Delphi's chief technology officer.

Fat Wireless Nets

Memphis-based FedEx Corp. will continue to operate a much slimmer backbone network than GM — relying on multiple T1 (1.54M bit/sec.) or T3 networks in the U.S. and abroad. However, the company is already planning to develop higher-speed wireless wide-area networks that can support a new generation of handheld units for couriers that have charge-coupled devices (CCD) — built-in digital cameras on a chip — to take pictures of airbills and the shipments themselves, according to Jimmy Burke, vice president of network computing at FedEx.

Burke adds that FedEx plans to use CCD systems to speed up customs paperwork for the company and its customers, an application he called "critical . . . as more and more of our volume goes international."

Sabharwal says he sees wireless technologies, both LANs and Bluetooth short-range systems, as having a "huge application" in plants. "We can use [wireless] with [radio frequency] tags to track the vehicle while it's being built, including the parts and whole modules," he says.

While Delphi's wireless agenda isn't as ambitious as GM's, Roberts says he is considering a completely wireless

telephone network to replace the PBX. "When you're in the office, you would use the phone in a docking station," he says. "It would give everyone one telephone number and save us the service charges [from changing numbers on wired phones]."

Fat Applications

Bandwidth-heavy ERP systems such as those from SAP AG will also boost the demand for bandwidth on both wired and wireless networks, according to Claude Marais, strategic relations manager for business systems at The Coca-Cola Co. in Atlanta. Coca-Cola has signed a deal with Equant NV in Amsterdam to design and manage a new wired network. The bottler will roll it out over the next two years to provide the higher bandwidth and reliability demanded by SAP systems.

Gus Otto, a network architect at Caterpillar Inc. in Peoria, Ill., says he's looking at ways to facilitate speedier desktop-to-desktop videoconferencing by connecting Caterpillar's conference participants on the outer edges of the network. That way, he wouldn't have to pull video and audio packets through the network core, which can degrade videoconferencing and slow down the whole network.

Making the concept work, according to Otto, is a matter of setting network policies that head off videoconferencing traffic at the network border and route it through servers outside the main firewalls.

Although some might see this as a security risk, Otto says connections could be made between sites over a private WAN backbone to reduce the risk.

Caterpillar is also exploring the use of "spoofing" technologies to optimize satellite systems for its global video teleconferencing network. These bypass IP procedures, which check for data integrity packet by packet. That double-checking creates a serious bottleneck in satellite networks that pipe traffic through a 44,000-mile round trip to and from satellites.

Atlanta-based Porsche Cars North America Inc. has already used such spoofing techniques on its satellite data network serving dealers, according to John Jacobs, the company's manager of dealer and field operations.

Instead of checking for receipt packet by packet, which is standard when using Internet protocols, spoofing fools the satellite into believing that all the data in a transaction has been received, and it checks only once at the end of a session for missing packets. Jacobs says spoofing combined with data compression has reduced latency in the Porsche network by two-thirds.

Thin Prices

Though bandwidth requirements will skyrocket during the next several years, network managers say they expect to be paying a relatively steady price for the increased capacity.

GM's Sahharwal says, "In terms of the cost for pure bandwidth, we are doing significantly better than Moore's Law," meaning advances in network performance in terms of constant dollars are outpacing advances in computer chip technologies.

Telecommunications providers say this stems from deployment of advanced optical networking gear that wrings more and more capacity out of fiber-optic strands that had a capacity

> "In terms of the cost for pure bandwidth, we are doing significantly better than Moore's Law.
>
> ARVIND SABNARWAL, DIRECTOR OF TELECOMMUNICATIONS, BENERAL MOTORS



GEORGE MARDIGIAN

f the Net

of roughly 135M bit/sec. 20 years ago.

Ben Vos, director of network planning and design at Sprint Corp., says dramatic advances in fiber-optic network technology will allow the company to increase the capacity of its optical network to 40G bit/sec. by 2002.

If customer demand warrants, Vos says, other multiplexing technology exists or is in the pipeline that could help the company boost the capacity of its network to 3.2TB — without having to lay another piece of fiber. WorldCom Inc. also plans to use multiplexing technologies to increase the backbone of its UUnet Technologies Inc. subsidiary to 40G bit/sec., in a similar time frame.

This jump in the capacity of fiber-optic networks results from use of what is called Dense Wave Division Multiplexing (DWDM) technologies, according to David Willis, an analyst at Meta Group Inc. in Stamford, Conn.

DWDM increases the data capacity of a fiber strand by piping streams of data along different wavelengths of light, riding on a pulsating laser.

According to engineers at Lucent Technologies Inc. in Murray Hill, N.J., telecommunications carriers have already deployed DWDM equipment that can accommodate up to 80 wavelengths, some running at 2.5G bit/sec. and others at 10G bit/sec. for a total throughput on an individual fiber of 400G bit/sec. Tests are said to be under way on DWDM equipment that can handle a total of 800G bit/sec. on a single fiber.

Mike Coghill, head network engineer at backbone provider Global Crossing Ltd. in Hamilton, Bermuda, says optical offers the best performance for the money.

"Internet requirements are doubling every six months or so," Coghill says, "and businesses are moving from 1.5M bit/sec. to gigabit access to local exchange. Today in a network, I have to add multiple electrical layers [to direct network traffic], and we can move photons easier than we can move electrons."

To bypass the optical-to-electrical conversion needed to route traffic in service provider networks, Coghill says Global Crossing has deployed two optical switches at major network hubs in Brook Haven, N.Y., and London, and it is testing U.S. terrestrial fiber lines to a cross-Atlantic link between the U.S. and Great Britain.

Tiny mirrors in these switches direct traffic by shining optical wavelengths from fibers on incoming ports to the fibers on outgoing ports.

Bottleneck

The gushers of bandwidth delivered by long-haul optical networks can create a traffic jam when they connect routers serving the borders of corporate networks, warns analyst Ken McGee at Gartner Group Inc. in Stamford, Conn.

It's at this outer edge where data speeding between sites at 2.5G bit/sec. or even 10G bit/sec. can be shunted into a holding pattern, waiting to land in a corporate network that's running at, say, 100K bit/sec.

To solve the latter problem, some companies are using load-balancing switches that route requests based on the application.

Requests for product and price lookups might be flipped to a database server that's available at once and is known to hold just that information, for example. Other types of traffic, such as e-mail or requests for specific Web document pages, could be sent to other servers dedicated to those applications.

This requires users to actively manage network traffic, including prioritizing traffic by type — voice, streaming video or pure data, for example — before it's routed to the core of the enterprise network, McGee says. This is because each has different bandwidth requirements, with video hogging bandwidth and voice requiring only 56K bit/sec., for example.

GM, Delphi and FedEx have all opted for Asynchronous Transfer Mode (ATM) technology to help manage and dynamically allocate bandwidth on their networks by automatically sizing the pipe to accommodate the type of underlying data.

> "[Voice over IP] is not there yet, but you can use it in Europe to save money."
>
> JIMMY BURKE, VICE PRESIDENT OF NETWORK COMPUTING, FEDEX

GM has also incorporated frame-relay technology into its networks. Sabharwal says the combination of the two technologies allows the company to more efficiently manage its network demands.

ATM, Sabharwal says, gives GM more flexibility in the network, compared with using separate networks for each service, such as video or data or large image files. This lets it increase the size of a pipe from 6M bit/sec. to 45M bit/sec., depending on the underlying traffic.

Voice Options

While voice over IP has received a lot of buzz over the past year, FedEx currently views it as a niche solution compared with switched voice, according to Burke.

Voice over IP sends phone calls over the Internet as packets, while switched voice transmits the call as an analog signal over a public network run by carriers such as WorldCom or Sprint.

"The technology is not there yet," Burke says, "but you can use it in Europe to save money," over the relatively high costs of still-regulated voice networks operated by carriers on that continent.

In the U.S., where large customers can command rates of a nickel or less per minute for phone service, "voice over IP is just not cost effective," according to Delphi's Robertson.

Corporate network managers view advanced systems as increasingly essential to the management of their entire businesses and supply chains.

Delphi's Robertson says his company uses its network to support "global engineering systems, e-biz initiatives, collaboration with our customers and suppliers through portals, sophisticated supply-chain optimization, scheduling and capacity planning."

Burke says FedEx is willing to explore any network technology that supports two simple but vital goals: quality and customer service. ◗

Integrated Wireless

FedEx believes that the artificial dividing lines between its various wireless systems, mobile WANs used by its couriers, high-speed LANs used in its hubs and short-range Bluetooth wireless connections will disappear in the future. Currently, these systems don't easily mesh, but Jimmy Burke, vice president of network computing at FedEx, says the company plans to deploy devices that can easily switch between the WAN used by the courier while on the road and the wireless LANs the company uses in its hubs.

This is essential in Burke's view, because the company wants to tap the 10M bit/sec. throughput of the wireless LAN to help couriers download fat digital signature files or images scanned by cameras housed in the courier's handheld terminals. Burke said this will take a big strain off the company's private wireless wide-area data network, as well as a system contracted from Cingular Wireless in Atlanta that today offers speeds of only 19.6K bit/sec. Burke also wants courier terminals that support short-range wireless Bluetooth systems under development by mobile phone manufacturers, PC and handheld device companies worldwide. Burke says he believes Bluetooth technology has been overhyped, with products promised for delivery by year's end still displayed in the prototype stage at this fall's Comdex. But, he added, "Bluetooth is very close and should be ready within a year . . . and we expect it to become the hub of a handheld communications [system] that communicates back to the truck . . . and will let a courier make a pickup at a customer and then transmit a manifest to the customer's PC."

Richard Brawman, senior vice president and general manager of wireless systems at Symbol Technologies Inc. in Holtsville, N.Y., said his company is developing "dual-band" wireless terminals – handhelds or bard-code scanners that incorporate modules that offer both Bluetooth technology and access to cellular networks.

The company is also working on another module that provides cellular and 802.11B wireless LAN access. Both dual-mode systems are slated for demonstration next year and should be ready for prime time when customers such as FedEx require such systems.

– Bob Brewin and James Cope

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2-D and 3-D Graphics

DEFINITION

3-D graphics are images that, though shown on a 2-D computer screen, can be manipulated in three dimensions. The viewer can "move" around the image and change the apparent viewpoint as if it were a real object in space. A 2-D image can seem to have weight, reflectivity, texture and depth, but it presents a single view, frozen in time and space.

BY SAMI LAIS

BETWEEN A 2-D image and its 3-D counterpart stand hundreds of thousands of calculations and a world of space and time.

Computer artists create a 2-D image on a plane, just as they would on paper. They can add textures and lighting effects, create reflections and blur backgrounds to simulate the mist of a distant horizon.

But should they want to change a noonday sun to a setting sun, they must also alter the drawing's colors, textures, shadows and highlights to reflect that change in lighting position.

What if the artist created that image with a 3-D program? Because calculations describing each object are an intrinsic part of 3-D images, the application could automatically make the changes.

2-D Basics

The differences begin with 2-D applications, which produce images that are either bit-mapped (raster) or vector.

A line drawn in a bit-mapped application is described in bits/pixel. At its simplest, 1 pixel is 1 bit, black or white. Higher definitions yield more colors — 8-bit definition yields 256 colors; 24-bit allows for 16 million.

A common 2-D bit-map application such as San Jose-based Adobe Systems Inc.'s Photoshop costs about $600 and is a basic tool for computer graphic artists.

A line drawn in a vector graphics program is described mathematically, not visually, and looks the same whether it's displayed at 100% or 5,000%.

To change a bit-mapped line, the artist must redraw it. To change a vector line, one need only change the equation that describes the line.

A vector application, such as Adobe's Illustrator, interprets each line drawn on an x-y matrix as two points connected by a line, or a vector. A circle or other shape is composed of many tiny vectors.

Whereas data on every pixel — even those in a blank background — must be stored in a bit-map image, only data on the drawing itself is stored for vector images. Thus, vector files are usually smaller than bit-map files.

The Third Dimension

3-D images are vector format drawings defined on an x-y-z matrix — that is, height, width and depth. To describe complex shapes and surfaces, a 3-D application views objects as composed of triangles — fewer triangles for broad, smooth planes, but more for uneven surfaces.

An important use of 3-D graphics is in computer-aided design (CAD) applications, such as San Rafael, Calif.-based Autodesk Inc.'s AutoCAD, which has been the industry standard.

Increasingly, CAD packages have 3-D capabilities that can convert 2-D drawings of a building into a 3-D representation through which viewers can do a virtual walk-through.

"Think of 3-D as a collection of objects, with a complete database of those objects stored not as a picture but as a description [of the object] viewable from any direction," says Louis Latham, an analyst at Gartner Group Inc. in Stamford, Conn.

At its simplest, CAD bridges the gap between 2-D and 3-D images with wireframe images. It outlines each plane of an object and stores the data as a series of mathematical descriptions and relationships.

In more complex solid modeling, the database on the relationships among objects prevents two objects from occupying the same space, which might inadvertently occur, for example, when modeling interrelated parts of a machine.

Bit-map and vector techniques let artists alter a 3-D object's texture or surface appearance. The simplest way is to create a texture map — a stack of 2-D bit-mapped images of a shallow texture such as brick, layered to create a 3-D texture, which the 3-D application can wrap around the 3-D object.

More visually convincing, especially where great depth of field is required (as in a forest) is to describe the texture in entirely mathematical terms. But this method requires large amounts of memory to recalculate each time the object or its environment moves or changes.

3-D Advantages

A 3-D application can automatically change shadows and reflectivity as light and materials change. With a few mouse clicks, an architect can change a lobby's carpet to tile or add a domed skylight.

On high-end desktops, 3-D is also showing up in geographic information system software. ArcView from Environmental Systems Research Institute Inc. in Redlands, Calif., lets users view data on the earth's surface as a 3-D visualization.

"In 3-D, you can go further and attach physical attributes like strength, flexibility or weight," Latham says. By linking a 3-D drawing to databases of material characteristics, an architect is able to determine, for example, whether a girder will support the weight of a building, he explains.



WITH 3-D graphics, the image as if it were

The Fourth Dimension

Through animation, another dimension — time — can be added. Defining the behavior of an object is relatively simple when contrasted with "modeling its behavior in the context of an environment that has characteristics of its own," Latham says.

Such modeling was used at the supercomputer processing level by DaimlerChrysler AG engineers to do crash testing of the PT Cruiser model, notes Robert Bishop, CEO of Silicon Graphics Inc. in Mountain View, Calif.

Engineers built 3-D images of the car's 30,000 components, half of them moving parts, and subjected the simulated vehicle to heat, stress-testing and wind-tunnel kinematics while in motion to determine danger points, Bishop says.

The National Oceanic and Atmospheric Administration in Washington uses 3-D images linked to weather data to model hurricanes. Pilots can fly through virtual storms and learn how hurricanes behave.

Developers also are building 3-D applications for e-commerce.

At Viewpoint Digital Inc. in Orem, Utah, artists draw a grid on an object and use a specialized scanner to take readings at the grid's interstices. They then use the data to create a 3-D image.

Compressed in the Metastream file format, the image resides on a Web server. A site visitor can view the 3-D object, grab it with his mouse and rotate it to see it from any angle.

With software developers creating simpler, faster ways to generate 3-D images, look for 3-D features to start showing up in more common desktop applications.

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

Start-up Delivers Many Happy Returns

E-RMA's Web-based service simplifies return and repair management for firms

BY AMY HELEN JOHNSON

AT MAINSTREET Networks Inc., which manufacturers the Clio PC Companion, the decision to outsource repair-management processing to application service provider e-RMA Corp. quickly paid for itself, as employees spent less time mailing instructions and walking customers through the authorization process over the phone.

According to Dave deJong, a technical support manager at San Jose-based MainStreet, support personnel now spend approximately 50% less time with customers. In addition, customers can track the progress of their repairs through a Web site, which eliminates many of the follow-up calls that also lowered productivity.

Click Here for Service

At MainStreet's Web site, users with problems can click on a link that takes them to e-RMA's servers, where they are asked a series of questions and their requests are approved or denied. If a repair is approved, San Jose-based e-RMA then e-mails the customer with a return authorization number and packaging and shipping instructions.

The e-RMA system maintains contact with the customer through e-mail, sending updates on the status of the repair. MainStreet's employees can access e-RMA's databases to see what activity is taking place and approve any repair requests.

DeJong highlights two main benefits of switching from a manual repair-management application to an online authorization process.

One benefit is that customers input their information, which saves MainStreet employees the time and effort of capturing it while on the phone with customers.

The second benefit is that MainStreet can write rules and procedures into e-RMA's business logic and set up automatic approvals for certain customers.

Better Returns

According to Dave Boulanger, an analyst at Bostoo-based consultancy AMR Research Inc., start-up e-RMA has found an interesting niche. Returns have always been "a real pain," he says, and most companies spend more time thinking about winning orders than about handling postsale problems.

Boulanger says he applauds e-RMA for attacking the inefficiencies and complexities of the returns process with several key pieces of technology: a portal that gives customers the status and other information about their problem's resolution, a workflow piece that handles the multiple steps within the process and the ability to send returns data hack to tbe seller's enterprise resource planning (ERP) systems.

But Boulanger also says some potential problems could be looming in e-RMA's future.

One is that when the company turns its attention to facilitating business-to-business returns between enterprises — an area that Boulanger cites as being the better market — the management problem gets increasingly difficult, taking into account variables like a product's customizatioo and sheif life.

Another problem is a serious lack of mooey that could undermine e-RMA's ability to continue product development.

Moving Up the Chain

E-RMA is facing another difficulty: The company is light on customers at the moment. CEO Raj Rajagopal acknowledges that he needs to get blue-chip companies to adopt the techoology. Currently, e-RMA is going after companies in the supply chain that don't have a process or centralized system in place to handle returns.

E-RMA has a clear field, Rajagopal claims, because most companies put a low priority on returns, handling them manually or building a customized system. As a result, he says, he sees little competition.

Rajagopal also has a great sales story, citing a cost of between $50 and $100 to manually process a return. With e-RMA, the cost drops to $10, be claims. The hosted service approach means that all parts of the supply chain, from supplier to assembler to sales channel, can participate in returns processing, Rajagopal says.

Branching Out

As for the future, Rajagopal says he's eyeing partnerships with shipping companies, which would handle the physical logistics of returns, and business-to-business integration tool vendors, which would expand the service's ERP systems support.

But e-RMA may need to do further product development if it wants to retain customers. DeJong says MainStreet may not be a long-term customer of e-RMA: The manufacturer wants a more inclusive system that handles help desk calls and offers customer relationship management features. ●

Johnson is a Computerworld contributing writer in Seattle.



CEO RAJ RAJAGOPAL claims that e-RMA's service can reduce a company's returns processing costs to $10 per transaction.

e-RMA Corp.

COMPUTERWORLD emerging companies

Location: 2355 Oakland Road, Suite 9, San Jose, Calif. 95131

Telephone: (408) 955-0244

Web: *www.e-rma.com*

Niche: Web-based repair- and return-management services

Why it's worth watching: It handles an underserved niche that's an expensive headache for many companies.

Company officers:
- Raj Rajagopal, CEO, chief technology officer and founder
- Naresh Shetty, vice president of sales and marketing
- Steve Stone, CIO

Milestones:
- 1997: Company founded
- June 2000: Beta released
- August 2000: Product shipped

Employees: 12: growing at 50% per year

Burn money: $750,000 angel investment; first round of venture capital financing under way

Services/pricing: e-RMA application services; $5 per transaction

Customers: Norsal International Inc., MainStreet Networks

Partners: Matranet Inc., Gizmo.com

Red flags for IT:
- Integration with back-end enterprise resource planning systems may be complex.
- Will the company get the funding it needs to grow?

[the buzz] STATE OF THE MARKET

A Niche of Its Own

Most industry experts pinpoint online sales as the best customer for a returns-management service like e-RMA. E-commerce firms have focused most of their attention on sales and fulfillment; the postsales support side has been neglected, says Chris Martins, research director at Aberdeen Group Inc. in Boston.

Greg Blatnik, vice president of Zona Research Inc. in Redwood City, Calif., is less sanguine about the need for e-RMA's services. "It's not a large enough or unique enough area to be an ASP business," he says. While e-RMA can fulfill an immediate need, eventually companies will correct that returns oversight and build the functionality into their e-commerce procedures, he says.

Dave Boulanger, an analyst at AMR Research, says the big risk for e-RMA is that a deep-pocketed rival could enter the market.

Boulanger says e-RMA has to be wary of shipping and fulfillment companies such as the U.S. Postal Service in Washington, United Parcel Service of America Inc. in Atlanta and FedEx Corp. in Memphis. These companies can easily use their delivery expertise to start a returns-management business.

The company's best course of action may be to partner with one of these potential opponents, says Boulanger. Other potential competitors include companies that offer postsales services, such as the following pair of vendors:

i2 Technologies Inc.

Dallas

www.i2.com

I2 is a supply-chain management, planning and execution firm that already has a service piece that parallels what some customers are doing with e-RMA in the repairs area. It could simply add another module to its TradeMatrix service.

iLogistix

Fremont, Calif.

www.ilogistix.com

In addition to offering pick-pack-and-ship services for U.S. manufacturers, iLogistix serves as a distribution center for European manufacturers, says Boulanger. One task iLogistix handles overseas is accepting damaged goods returns. That gives the company experience that it could easily import to set up a return-management business.

– Amy Helen Johnson



CEEVA'S SLOAN SEAMAN made sure his developers will have a playroom in the firm's new offices.

When the Outrageous Is Commonplace

Java object-oriented developers are in high demand. But because users rarely understand the work these key IT pros do, the demands routinely placed on them can be unreasonable. By Kim Fulcher Linkins

JAVA OBJECT-ORIENTED engineers are continually faced with outrageous client demands. But while the technology itself allows for an increase in productivity, if they're not careful, developers can he easily burned out by clients' demands. And many say they're not about to kill themselves for the sake of a project.

"Work is not life," says Sloan Seaman, vice president of technology at Ceeva Inc. in Pittsburgh. Ceeva is a software development firm serving middle-market manufacturing companies that want to Web-enable their existing systems.

"To this industry, it's quite often found that you tell someone it will take this long, but they want it shorter. And since they don't know what's involved, someone promises them that shorter date. Then, there goes your time line, and you're not sleeping for four days because you have to code," Seaman says. "So, you have to learn when you walk away from work, you walk away from work."

Seaman says that a typical project for a Java object-oriented engineer might involve Web-enabling portions of a company's business systems.

"We're doing component-based applications with a high degree of reusability," Seamao says. "We have a core system which basically works like a Web applications server, but it's much more modular than a normal Web applications server."

He explains that instead of having to buy a J.D. Edwards & Co. package for the Web that has "all these bells and whistles," for example, a client can purchase just what's needed in modular fashion.

"And if a module does not exist, they can share in the development costs of a new module. We develop this new module and develop it very openly so that we can go to another company and reuse the module. And when we do that, the company that helped [develop] it gets a royalty," Seaman says.

Good, Clean Fun

Sounds simple enough, but this is high-intensity work. So Java developers typically try to have fun and blow off steam during the day, because the job of coding is both mentally taxing and physically stressful, Seaman says.

"I believe strongly that most people who aren't developers don't realize that eight hours of coding is physically exhausting, believe it or not. People think, 'How?' But if you think about it, try doing math for eight hours straight. It's the same idea. You're really taxing your brain," Seaman says. "And ergonomics still haven't taken over tbe world, unfortunately. So, it's physically stressing."

Critical mental diversions for Java developers can include taking a short break to toss a football around or play a game online for just five or 10 minutes before going back to work for a few more hours, Seaman says.

Seaman is taking his creature comforts very seriously. "We're moving to downtown Pittsburgh, and we're getting three floors. I made sure that the one thing I got was a playroom so I can put in a Sony PlayStation 2 and a large-screen TV for my developers," he says.

Key Requirements

Successful Java developers need very good referencing skills, says Seaman. This means knowing how to look something up and being able to learo it quickly.

Java developers need that ability "because you cao't know everything in today's technology — especially with Java — and they keep introducing new [application programming interfaces] every other week," says Seaman.

They also need to learn to adapt. "Adaptability is key, because everything around us is changing so quickly that you just have to be very good at guessing what's going to he the next best thing," Seaman says.

He says it's the sheer challenge of finding one elusive bug that keeps him coming back for more. "The major challenge that occurs most of the day is brought oo by the individuals themselves, specifically me, writing code and all of the sudden, it's not working. Why isn't it working?" Seaman says.

Then the challenge involves looking through "a thousand different things in 20 different files" for the error, Seaman says. "So you just start hacking through it — OK, it's not this; maybe it's this. All computer programmers are not necessarily good mathematicians. They're very good at logic, because everything is a set of steps," he says.

The fun lies in the challenge of determining what the problem could be and what's causing the errors, Seaman says. And the most fun of all is being the one individual to triumph over the bug. ◗

Linkins is a freelance writer in Austin, Texas. She can be reached at KPLinkins@aol.com.

Just the Facts

- **Name and job title:** Sloan Seaman, vice president of technology
- **Company and location:** Ceeva Inc., Pittsburgh
- **Nature of work:** Project management and object-oriented Java development
- **How he got the job:** He had to Web-enable a technical assistance center in 1996 and decided to use Java, which was then a new technology.
- **Skills required:** A good knowledge of Java, the ability to reference, adaptability, aggressiveness and a sense of humor.
- **Training needed:** Java can be self-taught through lots of reading and by attending training seminars.
- **Job and salary potential:** The field is wide open for entry-level positions. With more experience, "you can just go out and say, 'I can do this. Who wants me?' and the line forms to the left," Seaman says. "That's where the real money is." Entry-level salaries start at $40,000. More experienced people can make up to $200,000 annually. And compensation is even higher for consultants, Seaman says.
- **Career path:** "You can only go so far in the programming structure, but a [chief technology officer] who has been in the trenches and has truly done everything and likes technology and keeps abreast of the technology definitely has a [strong] position in the market."
- **Advice:** "Get ready to work. You're going to be working hard. Learn to deal with stress, in terms of the language itself, buy lots of books. Have lots of reference material."

– Kim Fulcher Linkins

IT CAREERS IN CONSULTING



CONSULTANTS, IN THE PAST, PROVIDED GUIDANCE AND INPUT TO BUSINESS LEADERS ABOUT THEIR ORGANIZATIONAL STRUCTURE AND THEIR BUSINESS STRATEGY. TODAY CONSULTANTS STILL HAVE THESE ROLES, BUT THEY'RE ALSO IMPLEMENTING POWERHOUSE IT SOLUTIONS – FROM SELECTION TO DESIGN OF ARCHITECTURE AND INFRASTRUCTURE THROUGH IMPLEMENTATION, TRAINING AND PERFORMANCE OPTIMIZATION AND MANAGEMENT.

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Ajilon LLC
Baltimore, MD

Ajilon's strength is its cadre of experienced IT professionals, according to Melanie Lawrence, senior vice president of human resources and administration. "Our goal is to bring this expertise while keeping the cost in check so clients can live with the projects they need," says Lawrence. Ajilon, with 50 offices across the United States, has more than 6,000 employees. The firm provides services in a full range of sectors – healthcare, financial services, automotive and telecommunications.

While most projects involve some type of web-enablement, Lawrence says Ajilon is seeing more and more sophisticated projects. Recently the company worked with Providence Health Plan in Oregon to develop e-health security systems. "Throughout your career at Ajilon, you would get to work in a lot of different environments versus one particular type of company. You might work on a financial services project now and then a telecommunications project," adds Lawrence.

As the industry has evolved so too has Ajilon's expertise. "The types of people have changed because the technology has changed so much," explains Lawrence. "For instance, managed services has increased dramatically over the past five years."

Ajilon is looking for people who have applied their technical skills in a business experience. "We need people who have had an impact at a company," Lawrence says. "Our clients expect us to be able to offer counsel on how technology will impact their business decisions. We are providing our clients with a business partner, so this is technology plus knowing when and how to use it to solve a business issue."

Ajilon has openings across the country in the areas of development, application development and implementation. The firm offers a variety of career options that include leadership, delivery team and technical leadership.

"We see consulting as a long-term career choice. Our retention exceeds the typical consulting company," Lawrence adds "With our 50 different locations you have the opportunity to relocate and remain with this company. Ajilon University is our in-house education arm where you can get in-house career training, counseling and online training. It's an awesome capability that allows you to stay abreast of technology and business skills."

Arthur Andersen Business Consulting
Chicago, IL

If survey results tell a story, Arthur Andersen Business Consulting is putting its knowledge to work not only for customers but also for itself. The firm was rated number one in most every category of the Emerson Survey. Over the past year, Arthur Andersen Business Consulting has distinguished itself from the traditional audit branch of the company and its separation from Andersen Consulting.

"Probably what distinguishes us most is our unique Market Integration™ strategy," explains Jim O'Malley, national director of experienced recruiting. "Our client list is impressive, and we're involved with some of the best projects in business. We believe success in today's economy is about deploying new and innovative relationships with customers, suppliers, investors and employees."

In this vein, the firm has partnered with Agilent Technologies to implement a user-centered web design that transformed 45,000 pages of static content into a global e-business environment. O'Malley also points to a project that involved design and management of systems integration of an Ariba/I2 platform for MetalSpectrum, an independent, neutral online marketplace for specialty materials. The marketplace combines more than 80 percent of the specialty metals market's leading players and links manufacturers, distributors and end-users.

These types of projects require considerable experience. O'Malley says hiring over the past 12 months has been equally divided between new college graduates and experienced hires. "Our greatest success in recruiting experienced talent is from employee referrals," he says. "We're looking for bright people with inventive minds. We need individuals who possess skills and traits that our clients have grown to expect from us – superior technical skills, excellent communication skills, and the ability to work as part of a team.

"There are several reasons Arthur Andersen Business Consulting offers one of the best opportunities available," O'Malley says. "We have a highly sophisticated global infrastructure. There are resources to get the job done. Most people say a large firm like us allows them to work alongside the best and brightest in the industry. We work hard to maintain a high bar when it comes to selecting people. We have a deep commitment to the business of consulting, of bringing together strategic thinking, business knowledge and technical expertise."

Avanade
Seattle, WA

What do you have when two mega-giants in the technology and consulting industries pool their assets to create an all-new company? It's a multi-billion dollar startup known as Avanade. Microsoft and Andersen Consulting created the joint venture last spring to provide technology integration for Global 2000 companies and emerging market-makers around the world. Avanade builds on the advanced capabilities of the Microsoft platform to create customized, scalable solutions for complex e-business and enterprise infrastructure.

Adam Warby, vice president of sales and marketing, says the company, just nine months old, has 11 offices worldwide with

IT Careers in Consulting



plans to open an additional four by the end of March 2001. "I can't imagine two better partners," Warby says. "We combine the deepest understanding of Microsoft technology with proven experience in delivering results. We don't operate in neutral, we're passionate about Microsoft technologies and dedicated to integrating Microsoft-centric solutions into multi-vendor environments. Our unique partnership gives us an intimate knowledge of Microsoft products and enables us to anticipate the full potential of key technologies in development. Plus, our solution offerings are based on our unique intellectual property in the form of methods, tools and components, so we're able to deliver reliable customer solutions faster. There is a shortage of these capabilities in the market today, particularly when customers need to do everything at e-speed."

Avanade specializes in bringing full functionality and performance to customers through Windows 2000 and the net enterprise server family. The company currently has more than 30 active customer engagements, from Global 2000 companies to new economy players. Projects include a vast range, from assisting e-tail businesses achieve scale and stability on their next-generation sites to migrating a large insurance company and its sales channels to Windows 2000. A third client, a music publisher, is working with Avanade to develop global digital asset management and distribution systems.

"At times we work in tandem with Andersen Consulting team members, but also directly with customers," Warby says. Employees work on teams ranging from two members to 30 out of geographic offices. In the United States, there are five offices – Seattle, Chicago, New York, Dallas and San Francisco. "We believe the skills and expertise we bring are horizontal, meaning that they can apply across multiple industries," Warby explains. The company, which originally announced plans to hire up to 3,000 people by 2002, currently has more than 600 employees and plans to more than double that number by September 2001.

"We need people in systems engineering, solutions development and project management," Warby says. "More than that, we are looking for people who have a demonstrated passion for technology. Technology is the heart of what our business is. We also like to see a track record for being able to deliver." Because the Microsoft platform is the base expertise, Avanade will be hiring people to design, develop and implement system architecture and infrastructure, which has the Microsoft environment at the center.

"Employees give us several reasons as to why they come to work here," Warby adds. "First and foremost, they are interested in working in an environment where they feel they can have an impact. The ability to have a long-term focus on technology is also key. People who work for Avanade care about the future and want to build it with their own hands. Being part of a brand new company is tremendously exciting. All employees have a stake in the company and share in its success through our stock option program. But because of the backing from two established leaders in their industries, there aren't the same risks associated with being in a traditional start-up environment."

NetEffect Corporation
Atlanta, GA

In addition to providing network architecture and infrastructure, management and measurement, interactive call center technologies and managed services to its customers, NetEffect helps clients demonstrate the viability of technology projects and manage the performance and operability of the systems once they're up and running.

NetEffect, a Cisco professional services partner, assists clients by conducting feasibility and network assessments, front-end planning and validation, scope of work definition, and implementation of voice and data solutions and managed network services. "We also have the capability to use our labs as an interoperability and proof-of-concept center to create a model of the client's environment to validate our proposed solutions," explains Chris Price, director of resource development. "In addition, we are a Cisco channel partner for interactive call center technologies. Our service offerings are rounded by a dedicated managed service and technical assistance center, focused on providing application and infrastructure performance management, which in turn is driven from our implementation service offering capabilities."

NetEffect is headquartered in Atlanta and has offices in Raleigh, Washington DC, New York, Chicago, Kansas City, Dallas, Denver, San Jose and London. "We've ramped up very quickly and almost entirely on new-hire growth," says Price. "The company, which was founded in August of '98, now has 392 employees and will be looking to build its team to approximately 700 employees during the next 12 months."

Price is looking for field engineers and consultants, specializing in Voice Over X, data, security, call center technologies and unified messaging. "We need individuals capable of driving and providing true consulting services. These individuals will focus on creating, implementing and managing the performance of our clients' technical infrastructure. They not only need to be savvy with technical skills, but with an understanding of the underlying business drivers that impact our clients' businesses on a day-to-day basis. NetEffect employees will have an impact internally as well by being given the autonomy to impact the organization and our environment," says Price. "We can comfortably demonstrate that our services offerings are on the leading edge, enabling the next generation of infrastructure technology behind the Internet. Our key to success is in identifying individuals who are capable of delivering at this level. The technical and consulting development paths at NetEffect are never ending. With so few 'perfect fit' technical skill sets available to us in the market, we recognize the need to continuously expand our employees' capabilities, not only to increase their skills and market value, but to guarantee that our organization will maintain its leading-edge capabilities, which are defined by the employees' skillsets themselves. At NetEffect, the people are the product."

PricewaterhouseCoopers
New York, NY

Over the past five years, PricewaterhouseCoopers has changed dramatically, adding to the firm's extensive experience with ERP systems to offer clients expertise in strategic planning, finance, business-to-employee, customer relationship management and supply chain management. "However, the thing that truly differentiates us from other firms is our people," says Matt Hamlet, Americas recruiting leader for the management consulting practice of PricewaterhouseCoopers. "When we interview candidates, they get to meet with people they might work with, for or who will work for them – they are what sell the fact that talent and skills are what we are."

The firm works with top companies around the world. "We work on the edge, helping organizations determine what they'll look like not just a year from now, but five years from now," says Hamlet. "The result is an incredible roster of IT projects." The company offers opportunities throughout the world, and hiring is fairly equally spread across the United States. "We're hiring at all levels, from entry through managing directors and senior project managers," Hamlet adds.

Hamlet looks at resumes to distinguish those candidates who have worked in a consultative environment, who have industry expertise, as well as consulting skills, and who understand how to bring change into an organization through the use of some type of methodical approach. "The technical skills we need range from C++ to ERP," he adds.

While client projects and working with highly reputable colleges are primary reasons for joining PricewaterhouseCoopers, Hamlet says the career opportunities can't be overlooked. "We have a global capabilities framework that is our career model, allowing you to truly map out and plan your career. We invest heavily in training and education, keeping you current with technology while also supporting you as you evolve as an overall professional."

IT careers

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Programmer/Analyst / Software Engineer

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Jr Programmer Analyst (San Francisco, CA with relocation to varying job sites throughout the US) Analyze user requirements. Develop and implement client customized software using PowerBuilder application development system in a client server environment under an ORACLE relational database management system. $70,000/ yr, 40 hrs/wk Mon -Fri 8am -5pm REQD Bachelor's in Comp Sci. Engineering, Math, MIS, Business and 1 year exp in job offered. Relocation at employer's expense Apply at the Texas Workforce Commission Dallas, TX, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T Austin TX 78701 Job Order # TX 1104857." AD PAID BY AN EQUAL OPPORTUNITY EMPLOYER"

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support mainframe and web-based application software using VS COBOL II, CICS, JCL, DB2, Power Builder, SQL Server, Visual Basic, Oracle, Excel and XML on MVS and Windows NT platforms. Require MS degree in Computer Science/Engineering, or a closely related field, with two years of experience in the job offered or as a Programmer/Analyst. Extensive travel on assignments to various client sites within the U.S. is required. Salary $65,000 per year, 8:00 am to 5:00 pm, M-F Apply by resume to: Shri Ganged, President, Sysgro Technologies, Inc., 3081 Holcomb Bridge Road, Suite C-2, Norcross, GA 30071, Attn: Job ST

SOFTWARE DVLPMT ARCHITECT Dvlp software solns for business problems: monitor system performance, dvlpmt of disaster recovery programs, syst backup hardware/software config recommendations, code test & debug applications maintain user access config identify syst security issues. B.S. Computer Sci Engineering or equiv + 2 yrs exp in job or as Programmer/Analyst or Software Dvlpmt Exp must incld linking & analyzing systems & designing & complex systems. C Java & an object-oriented language Exp w/ UNIX or HTML $70K Send resume to C James John H Harland Co., 2939 Miller Rd Decatur, GA 30035

Multiple openings for permanent Systems Analyst and Software Engineer positions from entry-to-Senior-level throughout the United States to design, develop, test and implement transaction processing/business application software in mainframe or client/server environments utilizing particular tools which include two or more of: COBOL, IMS/DB, DB2, Assembler, CICS, JCL, IEF, Composer and CASE Tools B.S. in Comp. Sci., Eng., Math or related area. Will accept combination of education, training and experience in lieu of degree and will accept foreign education equivalency for some positions. Prior experience and MS required for some positions. Competitive salary/bonus/benefits offered. Most active locations include Atlanta, GA, Phoenix, AZ, Minneapolis, MN and Hayward CA Send resume to Global Software Development Services, Inc. Attn: Christopher Shelton, 1110 Northchase Parkway Suite 250, Marietta, Georgia 30067

SENIOR PROGRAMMER/ANALYST to analyze, design, develop, test, implement, maintain and support application software systems for Latin American insurance industry clients using Syncsort, COBOL, RPG, CLP, ODS, SDA, SEU, SQL Base and IDEAL on an AS/400 platforms. Require: Bachelor's degree (or equivalent) in Computer Science, Engineering, or a closely related field with two years of experience in the job offered or as a Programmer/Analyst. Three years of college education with an additional three years of experience in the field will be considered equivalent to the Bachelor's degree. Must be able to communicate fluently in the Spanish language (español/escrito). Periodic travel (50%) on assignment to client sites in Latin America is required. Salary $52,000 per year, M-F 8:30 a.m. to 5:15 p.m. Send resume to: Elizabeth Harley, Asst. V.P., MYND Corp., 1 MYND Center, Blythewood, SC 29016. Attn: Job AC

Software Engineer (multiple openings) Design, develop and implement software systems to determine feasibility of design and direct software testing procedures, programming and documentation. Must have one year of experience in job offered or as a computer professional as well as one year of experience Oracle Applications (Financials, Manufacturing – Order Entry & Inventory). Work requires extensive travel and frequent relocation. Bachelors degree in one of several limited fields: Computer Sci/Applic. Engr., Chem., Math or Physics or scientific or business related field. Salary: $70,000 per/yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Terry Faust, Manager, Washington County Team, PA CareerLink, Metcalf Center, Suite 150LL, 90 West Chestnut Street, Washington, PA 15301-4517 Reference Job Order No WEB 138561

Raytheon - C3I Systems is seeking a Senior Software Development Engineer for its Marlborough MA location. Candidate will research, design, and develop computer software systems by applying principles and techniques of computer science, engineering and mathematical analysis for use in one or more of the following applications: industrial, military, communications, aerospace or scientific fields. Will utilize one or more of the following computer skills: Computer Aided Engineering (CAE) tools, C, C++, Ada and UNIX programming language and configuration management tools. Job title exists (among experience in duties listed above is not a factor). MS (or U.S equivalent) in Computer Science, EE, or related field, or will accept B.S. in above fields plus 5 years progressive experience. To apply for this position please contact Robert Maidens, Raytheon Company, 1001 Boston Post Rd. M/S 1110478, Marlborough, MA 01752

Development Team Manager Leads and manages a team of seven American and French software engineers in connection with the design and development of specialized data processing and business information system for equipment manufacturers and distributors on an international basis. Analyses the software design needs of assigned customers, identifies and determines the system needs of customers which operate on an international basis and whose financial and tax functions involve multi-currencies. Oversees the design and development of databases, including the Conceptual Data Model (CDM), the Physical Data Model (PDM), the prototypes, the programmer's documentation and the user's documentation. Utilizes HTML, Informix, Visual Basics 6.00, Data Architect, Powersoft, AMC Designer and Robot Help to develop the software products. Supervises the development team in the software development process and ensures the strict conformance to the desired specifications of equipment manufacturers and dealers and the quality standards of the company. Required is an Associate in Science degree in Management Information Systems or Computer Science and three (3) years of experience in the position being offered OR three (3) years of experience in the related occupation of Analyst Programmer or Systems Analyst. As part of the required experience in the position being offered or in the related occupation, the applicant must have had experience in requirements analysis, design, development, implementation, and enhancement of software systems to support the business functions of equipment manufacturers/distributors operating in international markets; had experience in designing, developing and implementing software to support different databases, including Visual Basic 6.0 and Informix; had experience with object oriented technology and internet connectivity; and had experience in relational software development (multi-languages, multi-currencies) and experience with EEC (France, Germany, Spain, Italy, England) concerning taxes and accounting. Must have proof of legal authority to work in the U.S. Monday through Friday 8:30 am to 5:30 pm 40+ hours per week. $61,355 annually. Applicants apply by resume only to: Colorado Department of Labor and Employment Employment Programs, ATTN: Jim Shimada, Two Park Central Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number CO-4662357

Software Applications Technical Lead/Project Manager Analyzes, designs, develops and implements applications for business processes such as OTR (Order To Remittance) for global manufacturer of medical diagnostic equipment. Analyzes functional user requirements. Plans and monitors application projects. Prepares guidelines for applications development. Designs and develops applications. Engages in database modeling. Ensures application development quality by quality assurance and version control mechanisms. Designs monitors and participates in system level testing. Selects technology and tools required for applications development. Required is a Master of Science degree in Computer Science, Computer Engineering, or Information Systems and three (3) years of experience in the position being offered or three (3) years of experience as a Systems Analyst or Application Designer. As part of the required experience in the position being offered or in the related occupation the applicant must have had experience in designing and developing applications using various databases in different software environments, including Oracle, MS DB2, and VS COBOL; had experience in Oracle RCA architecture and various GUI tools including Developer 2000, Power Builder, MS Access and ASP; had experience working with Sun Solaris (UNIX), Windows, and MVS Mainframe technologies; had experience with quality metrics and software quality procedures; and experience with configuration and version control tools and had experience in software [illegible] Monday through Friday, 8:30 am to 5:30 pm, 40 hours per week. $80,000 annually. Qualified applicants may submit two (2) copies of resume and cover letter to: Mike Brooks, File #C1017780 DWE-ALC PO Box 7972 Madison, Wisconsin 53707-7972 Reference File #C1017780

Senior Software Engineer and Software Engineer positions available to design, develop and implement software systems to determine feasibility of design and to direct software testing procedures, programming and documentation. Candidates must have one year of experience in job offered or as a computer professional. Some positions require additional year of experience in a particular skills set (see below). Bachelors or Masters degree, or foreign equivalent, as required in one of several limited fields: Computer Science/Applic. Engineering, Chemistry, Math, Physics, or scientific or business related field. In lieu of Masters degree, Bachelors degree, or foreign equivalent, with two years of progressive experience will be accepted. Work involves extensive travel and frequent relocation. Salary ranges from $70,000 to $120,000 per/yr depending on skill set and experience. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Randigan, Jaime Lopez, 6400 Campbells Run Road, Pittsburgh, PA 15205

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Software Engineer and Senior Software Engineer Positions to design develop and implement software systems to determine feasibility of design and directs software testing procedures programming and documentation Work involves extensive travel and frequent relocation Must have one year of experience in job offered or as a computer professional as well as one year of skills in field Bachelors to Masters degree in one of several related fields Computer Science Appls Engineering Chemistry Math Physics or scientific or business related field We accept Bachelors degree with five of progressive experience Salary $65 000 to $105 000 per yr 40 hrs/wk 9 00-5 00 p m Please submit resumes to Respogm Jaime Lopez 4400 Campbells Run Road Pittsburgh PA 15205

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Programmer Analyst - PC Networking/Sys Admin & Appl Integration Utilizing Novell of networking topologies networking technologies & PC architecture install configure & manage physically distributed computer networks operating systems Provide user support network troubleshooting network expansion printer services & back up mgmt Coordinate local & remote hardware & software configuration implement & execute operations procedures & monitor system resource utilization perform capacity planning Interface main application environ w/underlying networking software Carry out performance tuning of network for user applications Req B S in comp sci -math/ engr/stats Bus/fin/acctg commerce or equiv 1 yr exp in job offered or as programmer analyst/systems analyst Must have appropriate combination of skills as follows a) A & 2 of B & 1 of D b) 1 of D or 2 of A & 2 of B & 1 of C & 1 of D A includes Operating Systems Novell Netware Windows NT OS/2 Windows 95 LAN Server Banyan Vines LANmanager LANtastic / B includes networking IPX/SPX TCP/IP FTP Windows for Workgroups NetBIOS X.25 C includes network mgmt SNMP LANmanager NetWare NetManager D includes LAN technologies Ethernet Token Ring FDDI High mobility preferred (Multiple positions) 40 hrs/wk $53 000 - $58 000/yr Report/submit resume to Terry N Faust Mgr Washington County Team PA Career Link Mitchell Center Ste 116LL 80 West Chestnut St Washington PA 15301 Web 136090

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Infrastructure Manager (Information Systems) for company located in Miami, 40-hour week, 9 AM - 5 PM. $66,000 per year. Bachelor's Degree or foreign degree equivalent in economics or business administration or marketing and 2 years experience in job offered or 2 years as a regional manager. Will supervise 9 employees. Ensure reliability, opportunity and continuity of local area network infrastructure installed at company among all hardware and software components; support the IS Function throughout Latin American Region countries to achieve the company business goals; follow up corporate and regional policies, procedures and standards in relating to local area network management and its corresponding technical support; provide local and regional support relating to LAN management and support as well as regional projects; test and certify hardware and software identified as components of the LAN IS standard platform as well as the Platform Test Facility management. Will warranty the operational continuity and integration of products, systems and services in the company and in its different locations; ensure security of [illegible] software/hardware to prevent and detect lack of information and for damage, provide technical support services to users in relation to use of tools and products in the network and solution of problems. Submit resume to Bureau of Workforce Program Support, A.L.C. Unit, P.O. Box 10689, Tallahassee, FL 32302-0689. Re: Job Order FL-2137925.

Programmer/Analyst needed for IT development and consulting firm located in Lakewood, CO. Job duties include: Engage in the analysis, programming and development of computer applications/systems using C, C++, and Oracle on a Windows NT platform. Perform work as part of a team under direct supervision. Applicant must have: M.S degree in Computer Science/Engineering, Mathematics or Business. Applicant must also have coursework or exp. using C, C++, Oracle and Windows NT. 40hr/wk. 8am to 5pm. M-F. $57,500/yr. Mail resumes to: Colorado Department of Labor & Employment, Employment Programs, ATTN: Jen Shimada, Job Order #CO4835609, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117.

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Software Engineer Must have a Master's Degree in Computer Science to Engineering with 3 years of experience or a Bachelor's Degree in Computer Science or Engineering with 5 years of experience in software development. 3 years C++ programming and knowledge of Java programming. Experience in PC, Sun and HP hardware platforms, specifically HP-UX 10.30 & 11.0 a must. Will be responsible for object oriented software analysis and design using Booch, Rumbaugh, and UML methodologies and Rational Rose case tool. Will also be responsible for database design using Versant OODB and Oracle. Must be able to perform software implementation using programming languages C++ and Java, as well as responsible for software testing for large scale telecommunications high-performance applications, network management and network simulations systems on a UNIX system using POSIX threads and X.25 communications protocol. Will be responsible for a four (4) member team in the design and development of GUI representation of telecommunication network using Oracle, C++, Java, and Autodesk MapGuide. Salary $63,500. Send resumes to Spectrum Software Inc. 9965 Jimmy Carter Blvd. Suite 2150, Norcross, Georgia 30071, Attn: Human Resources.

elcom, etc.
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JUNIOR PROGRAMMER/ANALYST (multiple positions) to analyze design develop, implement, maintain and support application software systems for Latin and South American insurance industry clients using Synon, COBOL, RPG, CLP, SQA, DFU, SEU, OfficeVision, SQL and DB2 on AS/400 platforms. Require Bachelor's degree in Computer Science, Engineering, or closely related field with 6 demonstrated ability to perform stated duties gained through previous work experience / academic course work. and projects. Must be able to communicate fluently in the Spanish language (spoken/written). Periodic travel (50%) on assignment to client sites in Latin and South America is required. Salary $41,730 to $44,840 per year. M-F 8:30 a.m. to 5:15 p.m. Send resume to Elizabeth Haney, Asst. V.P. MYND Corp., 1 MYND Center, Blythewood, SC 29016. Attn: Job RN.

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COMPUTERS -

Software Engineer (one opening) Design, develop and debug computer software systems, using RDBMS products on Windows NT and Unix platforms. Design test plans for RDBMS-based applications. Run and analyze tests, resolve errors, suggest or implement solutions. Update documentation and perform user consultation.

Reqs: Positions require BS in CS, Engineering or related field plus 1 year of experience (will accept two additional years of experience in lieu of degree). Experience must include: 1) RDBMS, 2) PL/SQL, 3) HTML, 4) Unix.

Job site/interview: Colorado Springs, CO. $59,534.00/yr, 40 hrs/wk. Application by resume only. Send resume to job order number CO4683366, CO Dept of Labor & Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117. EOE.

Programmer Analyst (2 positions) - Plans, develops, tests and documents computer programs applying knowledge of programming techniques and computer systems. Will utilize Fox Pro and RPG 400. Will perform routine tasks and will work under close supervision while assisting staff. Work is closely monitored and reviewed for accuracy. Requires: 3 yrs experience in the job offered or 3 yrs experience as Systems Analyst, Software Engineer or Systems Engineer. Must have 1 yr exp using FoxPro and RPG 400. 5 day, 40 hrs/wk, $47,000/yr. Please mail resumes to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number CO4683606.

Concoo head quartered in Santa Clara, California, a leader in software development and internet solutions, has multiple senior and entry level positions available for Programmer Analysts, Software Engineers, Project Managers, IT Consultants, & Database Administrators. If you are a highly motivated individual send your resume to CMOS HR Dept at 408-988-4051

Engineers/Consultants/ Programmer/Analysts needed. Several senior and entry level positions available for qualified candidates possessing MS/BS or equivalent and/or relevant work experience. Work with some of the following skills: HP3000, COBOL, POWERHOUSE, Supertool, Unix and Oracle. Must be willing to travel and relocate as required. Fax resume to SOFTMATRIX Inc at 916-786-5140 in Roseville, CA.

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Sr. Software Engineer sought by high-speed fiber optic switching design & development company in Broomfield, CO to: act a senior level, engage in full-life cycle software development. Specifically create embedded software applications that run on proprietary operating systems, web based applications, &/or internet client server software applications. Analyze requirements. Create designs & design documentation. Code, test & debug the software applications. Engage in code review & create technical documentation. Engage in project management as required. Use object-oriented analysis & design methodologies. C/C++, proprietary debugging programs, & other tools & languages in the design & development process. Provide technical assistance & mentoring to other Software Engineers. Requires Master's, or equivalent in Computer Science or related field. Specifically, this position requires a Master's, or foreign degree equivalent, plus 3 yrs of progressive software development experience or a Bachelor's or foreign degree equivalent, plus 5 yrs of progressive software development experience. Working knowledge of full life cycle software design, C/C++ & object-oriented analysis & design methodologies. $78,100/yr, M-F, 8am-5pm (5 openings). Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4683686.

hp, one of the "Most Admired Companies in America" according to Fortune Magazine's latest ranking of U.S.-based companies, is a global leader in everything from computer systems and solutions, to test and measurement systems. We have opportunities available in Fort Collins, Greeley and Loveland, Colorado in the following positions:

- Communications Manager
- Hardware Design Engineer
- Software Design Engineer
- Product Marketing Engineer/Product Manager
- Member of IT Technical Staff
- Information Technology Specialist

hp offers competitive compensation and excellent benefits, including profit sharing, stock purchases, 401K and a retirement plan. We invite you to e-mail your resume indicating Ad #8324 to: resume@hp.com (Subject Line: Ad #8324), or send/fax it to: Hewlett-Packard Employment Response Center, Attn: Ad #8324, 3000 Hanover Street, MS20AZ, Palo Alto, CA 94304-1181, FAX: (650) 813-3860. Please be sure to include Ad #8324 on your resume.

hp is an equal opportunity employer dedicated to affirmative action and work force diversity.

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invent

COMPUTERS

POSITIONS: Senior Technical Support Analyst (multiple openings)

POSITIONS DESCRIPTION: Working independently provide technical interface to customers in resolving problems related to installation, maintenance, usage and workarounds for financial and manufacturing products and applications. Design, develop and debug computer software system diagnostic tools specifically related to financial and manufacturing applications based on RDBMS technology. Resolve technical product and testing issues, provide code fix as and resolutions, and conduct beta release testing. Lead in identifying and developing new enhancements to customer interface features and products and plan and implement their portability. Coordinate with other engineering staff to evaluate operational and performance requirements, and suggest process improvements.

EDUCATIONAL REQUIREMENTS: MS in CS, Engineering, Math, Physics or related field or foreign equivalent (see Special Requirements below).

SPECIAL REQUIREMENTS: Positions require MS in CS, Engineering, Math, Physics, or related field or foreign equivalent plus 2 years of software Engineering experience. Experience must include:

1) SQL
2) Windows NT
3) Financial Applications
4) RDBMS

Job site/interview: Colorado Springs, CO. $67,400/yr, 40 hrs/wk. Application by resume only. Send resume to job order number CO4683674, Colorado Department of Labor & Employment, Employment Programs, ATTN: Steve Willemsen, Two Park Central, Suite 400, 1515 Arapahoe St, denver CO 80202-2117. EOE.

careers.com

Web Site Developer sought by non-profit educational research organization in Aurora, CO to: under close supervision engage in moderately complex tasks regarding designing, developing & maintaining an internet website & internet database applications. Design & implement web based relational database management systems using SQL Server. Use HTML & XML languages to maintain web pages. Modify & create new functionality for database projects. Engage in data migration, storage & recovery. Troubleshoot & problem solve any script issues with the web site & database applications. Incorporate Vbscript, Javascript & Perl in the web front-end, & SQL language to manipulate data at the back end. Requires Bachelor's or foreign degree equivalent, in Computer Science, Engineering, or related field (including Mechanical Engineering). Working knowledge of software application design & development: HTML, RDBMS design & Java or Javascript. $52,000/yr, M-F, 8am-5pm. Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe St, Denver, CO 80202, & refer to Job Order No. CO4683724.

Chief Computer Programmer - Will plan, schedule and direct preparation of programs to process data and solve problems by use of computers. Will consult with managerial and systems analysis personnel to clarify program intent, identify problems, suggest changes and determine extent of programming and coding required. Assigns, coordinates and reviews work of programming personnel. Will perform routine tasks and will work under close supervision while assisting staff. Work is closely monitored and reviewed for accuracy. Requires Bachelor Degree in Computer Science, Electrical or Electronic Engineering, Mathematics or other Technical Degree. Must have 1 yr experience in the job offered or 1 yr experience as Programmer Analyst, Systems Analyst or Project Developer. 5 day, 40 hrs/wk, $55,000/yr. Please mail resumes to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order number CO4683605.

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SENIOR MEMBER TECHNICAL STAFF/COMMUNICATIONS PRODUCT DEVELOPMENT
Advanced Research, design, development and implementation of new wired and wireless communication technologies for voice and data applications targeted at Digital Home networking. Responsibilities include software architectural design, software requirement analyses, object oriented design, design of real time embedded system software using C,C++ design of packet structure for realizing IEEE802.11 (b)Compliant Wireless LAN's, design of the interfaces for 10baseT and USB devices of the system, implementation of Forward Error Correction and Reed Solomon error correcting codes, design of basic band MODEM with symbol timing and clock recovery, VHDL Coding and prototyping the modem for design validation followed by IC development release is a must. Also responsible for patent filing, documentation verification and release of the design information. Training junior engineers and product development engineers. Requires M.S. of Master of Technology in Electronics/Electrical Communications Engineering, Electrical Engineering, Computer Science or closely related; requires five years experience in design, analyzing and developing software and VHDL codes for two way communication systems; experience must include software development on Embedded system using Real-time operating system, assembly languages, FPGA designs using VHDL, Communication protocols for wireless two-way connectivity, error correction codes and burst mode controllers. Must have current authorization to be permanently employed in the United States. Annual salary of $68,000. 40 hours/week (8 am - 5 pm). Send resume with Social Security Number to: Indiana Department of Workforce Development, 10 N. Senate Avenue, Indianapolis, Indiana 46204-2277. Attention: DPG. Reference: ID# 6097929

Analyst Programmer. Assist in solving business problems and improving productivity by assisting in the efficient use of technology through the development and support of mainframe and distributed computer systems and completion of complex project tasks. Research, analyze, define, recommend, and facilitate agreement with users on system requirements and feasibility. Communicate systems opportunities and constraints in terms users can understand to promote use of technology in meeting business needs and provide support for production systems, including off hours support to negate or minimize delays to the operating system. Assist in the development of user and/or technical specifications, assist in the development of project plans and implementation schedules; develop basic systems designs, write complex codes; document program system functionality; develop test plans and test and verify accuracy and completeness of changes; debug computer programs; systems and business related problems; and implement new or enhanced systems/programs. Bachelor of Arts in Computer Science and two years of experience in job offered is required. Experience must include programming languages COBOL, JCL, TSO, SQL, DB2, CICS operating systems MVS, UNIX, DOS, WIN 95/98/NT, VAX, OS/2, WIN 3.X; UNIX hardware; software including TSO/ISPF, VSAM, Access, Excel, Lotus 123, Borland Paradox, Disease, SQL server, Telon, Autocad, and IDEA-Software, and Data Mining and Data Warehousing technology. Must have current authorization to be permanently employed in the United States. Annual salary of $56,600 - 40 hours/week (8 am - 5 pm). Send resume with Social Security Number to: Indiana Department of Workforce Development, 10 N. Senate Avenue, Indianapolis, Indiana 46204-2277. Attention: DPG, Reference ID # 6099192

Software Specialist. Bloomfield Hills, MI. Perform advanced research & development of software technologies & apply them to the development of Occupant Sensing Systems, specifically software for Ultrasonic/Optical Spatial Sensing & weight sensing systems to increase functionality & performance. Develop software algorithms w/ particular emphasis on more advanced concepts like Artificial Neural Networks & Fuzzy Logic for implementation into micro processor electronics or computer programs. Work closely w/customers to adapt the technology or application programs (platforms). Present the results & teamology both internally & externally. Plan development & document software designs according or approved standards & code as appropriate or a level that can be used for prototyping or product implementation. Apply the APDS development procedure to the development process. Master's Degree or educational equivalent in Electronics Engineering Systems Engineering or Software Design & Engineering & 2 yrs experience in the position offered or in a related software/systems engineering position. 2 yrs experience must include experience in (1) software systems design & analyses specifically in ANN & Fuzzy logic as applied w/ safety-related systems for the automotive industry; (2) microprocessor systems particularly embedded systems; (3) ultra sonic or other wave phenomena modeling; & (4) MatLab/LabView. 40 hrs per week, $70,000 per year. Resume to Human Resources, Autoliv, 1320 Pacific Drive, Auburn Hills, Michigan 48326

Internet Developer Database Designs, implements, develops, and modifies various software and software systems for implementation into a relational database management system which is installed in a networked client/server environment. Develops appropriate protocols, hardware and software integration and related data acquisition and transmission procedures for use in both internet and intranet multiple business applications for use internally and for corporate customers. Uses SQL and related database software tools to ensure appropriate integration of processes and related data for both hardware and software to be used in the analysis of various manufacturing as well as management information purposes to allow necessary business decision-making processes. Requires M.S. degree in Computer Science. Also requires six months experience in the job to preformed or 6 months experience as a Computer Laboratory Assistant. Experience must include development of networked protocols in a client/server environment. Hours 9am - 5 pm, 40 hours per week at $62,000 per year salary. Applicants must show proof of legal authority to work in the U.S. Job Location: Bedford Park, Illinois. Please send two copies of resume and cover letter to: Illinois Department of Employment Security, 401 S. State Street - 7 North, Chicago, IL 60605. Attention: Sheila Lindsey. Reference #V-IL 24413-I. AN EMPLOYER PAID AD. NO CALLS.

Senior Systems Engineer. Resp for requirements definition, analysis, information modeling, relational database design, development of testing, implementation, data administration & project management in all phases of development life cycle in Client Server, relational database environment for both online transaction processing and decision support systems in a multi hardware, multi software environment. Design, architect, & deploy large Client Server business systems for government and commercial clients using GUI development tools including PowerBuilder, Oracle Developer 2000 & databases such as Oracle, Sybase, DB2 on UNIX based HP/SUN/IBM machines and windows based personal computers. Provide 3rd level engineering support & problem resolution of an advanced complex and multi tasks level including configuration, application performance & security management. Resp for coordinating w up to 5 programmers, &/or Consultants, and/or Systems Engineers, whose responsibilities include programming, coding, implementation & testing of Relational Data base Systems & interfacing w older mainframe systems. Req: M.S. Engineering &1 yr of exp in job or 1 yr as a Consultant (Computer Design Dev) &/or Senior Programmer Analyst. 40 hrs/wk. Wage is $68,640/yr. Apply at the Texas Workforce Commission, Dallas, Texas or send resume & ad to 1117 Trinity Room 4247, Austin, Texas 78701. Job# TX1025369. Ad paid by an Equal Opportunity Employer.

Manager, Localization and Product Development. Responsible for overseeing Japanese and other Asia-Pacific localization of advanced software products which includes preparation/translation of as translatable files including software user interface, error messages, on-line help, manuals and other documentation. Select and work closely with outside localization services or identify and resolve localization issues while considering cost, performance and delivery date. Validate linguistic quality of localization done by outside vendors and work with the U.S. development and documentation teams to identify and resolve localization issues such as technical accuracy and consistency using Corel Catalyst and Trados WorkBench. Prepare, review and test application programs and on-screen interfaces to determine accuracy, consistency and functionality. Repair problems by working with the U.S. development team and through the use of Microsoft C++ and "installshield." Direct growth and development of the localization team in Japan and in the United States. Bachelor's degree in Technical Writing and four years of experience in job offered is required. Experience must include: management of technical computer software localization; localization tools, including Microsoft C++, "Installshield", Corel Catalyst, and Trados WorkBench; technical fluency in Japanese. Must have current authorization to be permanently employed in the United States. Annual salary of $75,000. 40 hours/week (8 am to 5 pm). Send resume with Social Security Number to: Indiana Department of Workforce Development, 10 N. Senate Avenue, Indianapolis, Indiana 46204-2277. Attention: DPG. Reference: ID #6099498

Programmer, Engineering and Scientific (multiple openings). Convert engineering problem formulations to formal processable by computer, resolve symbolic formulations, prepare flow charts and block diagrams and encode resultant equations for processing by applying principles of engineering, confer with other engineering and technical personnel to resolve problems of intent, inaccuracy or feasibility of computer processing, enter program into computer system, and use Oracle, Visual Basic and SQL. Req's Bachelor's in Compu. Sci.; Systems Analysis; CIS; Compu. Engg.; Electrical Engg.; Electronic Engg.; Mechanical Engg. or Maths or its equiv in ed & exp plus 2 yr exp in job offered or 2 yr exp in a related occup as a Programmer, Programmer Analyst, Deputy Manager (Distribution/Logistics), Systems Analyst, Software Engineer or Consultant. Will accept 3 yr of college ed plus 3 yr exp in job offered or in a related occup in lieu of the req ed & exp. Will also accept any equally suitable combination of ed., training and/or exp. which would qualify an applicant to perform duties of job offered. $60,901/yr., 40 hrs/wk., 9a-5p, M-F. Send resumes to MDCD/ESA, P.O. Box 11170, Detroit, MI 48211-1170. Ref. No. 2444/8. Employer Paid Ad.

Web Software Developer Dsgn & dvlp s/ware using public key infrastructure encryption technologies, Internet protocols & Java. Utilize UNIX, Java dvlpt & other tools to produce custom electronic data interchange s/ware. Dsgn, dvlp, troubleshoot, implmt & support s/ware for web applics using Java, JavaScript, HTML, Java Server Pages & servlets. Work w/graphic designers, corporate communications & other members of project team to dvlp applics, interface dsgn & architecture of website. BS in comp sci, engrg or related field + 3 yrs exp in job offd or in related occupation such as programmer analyst or s/ware engineer. Must show demonstrated ability to dsgn & dvlp s/ware using Java, HTML, and Java Script on UNIX operating system & demonstrated knowledge of encryption tech & Internet protocols including SMTP, POP3, HTTP & FTP. 40hrs/wk, 55K/yr. Must have proof of legal authority to work in US. Send resume to: Iowa Workforce Center, 215 Watson Powell Jr. Pkwy, Des Moines, Iowa 50309-1727. Please refer to Job Order #A1197186. Employer paid ad.

IT PROFESSIONALS NEEDED

Programmer Analysts, Systems Analysts, Systems Engineers, Software Development

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SR. PROGRAMMER ANALYST

Design & implement datawarehousing principles, design & develop processing modules, write hi speed loader. Enhance/maintain bus. s/ware & comp. prog., write code, prep test plans. Install s/ware ensuring proper connectivity. Develop queries for data manipulation & interface classes, perform system integration and documentation. Provide tech support, supervise programr/analysts. Utilize Visual Basic, C/C++, MS-SQL Server, GUIs & Crystal Reports. Must have Master's degree in Comp Sc, Math or related area. At least 2yr exp in similar position. 40 hr/wk. Competitive salary w/ excellent benefits.

Send resume & salary req'mts to: Blockbuster Inc., Attn: Corporate Recruiter, 1201 Elm St., Dallas, TX 75270 or email it to us: careers@blockbuster.com. **REF# ISM0029N**. Blockbuster is an equal opportunity employer

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Programmer/Systems Analyst. Conduct computer programming and systems analysis. Specifically: (1) Creating and modifying computer programs and reports in PICK BASIC, UNIX and with NT environment; (2) Evaluating accuracy of existing reports; (3) Installation and maintenance of software and hardware; (4) Training of users and development of training materials; (5) Problem analysis with computer systems and determining resolutions, and (6) Troubleshooting network problems. Requirements: Bachelor's degree in Computer Science, Management Information Systems, or a related field. 40hours per week, 8:00a.m. to 5:00 p.m., $42,000per year. Send resume with Social Security number to: Indiana Department of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277. ATTN: DPG. Refer to ID #6098348.

Programming/Analyst II. Cincinnati, OH. Develop, modify, and implement complex information systems. Code and implement efficient architecture components that conform to company's architectural standards. Provide technical consulting regarding architectural principles and development techniques. Plan and execute accurate test plans. Prepare programming estimates for new projects, enhancements and application maintenance. Provide training for less experienced developers. Use Visual Basic, Visual C++, ASP, VB Script, and HTML. Req: B.S. in CS or related field and working knowledge through academic coursework or experience, of Visual Basic, Visual C++, ASP, VB Script, and HTML. Salary: $56-65K/yr. DOE. Jennifer Falk, Federated Systems Group, 5885 State Bridge Road, Duluth, GA 30097. Please reference C106.

Programmer/Analyst assigned as Senior ABAP Developer/Analyst to analyze, design and develop programs or systems to solve business needs and problems, utilizing ABAP programming language. Requires Bachelor's degree or equivalent in MIS, Computer Science, Engineering, Mathematics, Statistics or closely related field. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicant must be able to perform job duties on date of application. Salary $75,000 to $85,000 per year, plus company employee benefit plan; 40 hours per week. Send resumes to Mr. Larry Blazevich, Sigma-Aldrich Corporation, 3050 Spruce Street, St. Louis, Missouri 63103. An Equal Opportunity Employer

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Database Administrator - Perform database administration using C++ and Visual Basic. Revise various database systems such as IBM AS/400, Lotus Notes Server, Cisco Pix Firewall, AT&T Frame Relay and Pentium computers for compatibility. Providing training to employees. M-F 40 hrs. 7:30-4:30. Overtime - Varies - $31,800/yr. Requirements: Bachelor's Degree in Computer Science or Computer Information Systems. Special Requirements: Must have completed at least one academic course with C++ and Visual Basic. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of both resume and cover letter to: Illinois Department of Employment Security, 401 S. State St., 7 North, Chicago, IL 60605. Attn: Lydia Clarke. Ref. #V-IL 24334-E. No calls. An employer paid ad.

SeniorDatabaseAdministrator NE OH biotechnology firm seeks Senior Database Administrator, design, analyze, plan, maintain EDP infrastructure system, create, evaluate, plan, budget & install new/modified systems. Master's Computer Science plus at least 1 yr exp. Send resumes to Mr. Bill Busby, Athersys, Inc., 3201 Cleveland Ave., Cleveland, OH 44113. Equal Opportunity Employer

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Computer Professionals (Multiple Openings/WiExp. in one of the following:

Peoplesoft-Financials (Billing, Project Costing, Budgeting, Asset Management, GL, AP) and HRMS Package. Object Oriented Design/Programming, Java, JavaScript, C++, HTML, PERL, Oracle, DB2, Windows NT, Unix. Apply to: Object Designers Inc., 12374 Mackey, Overland Park, KS 66213.

Senior Systems Analyst wanted by Computer Networks Consulting Co. in Woodbridge, IL. Must have Bachelor's Degree in Comp Sci or Elec Eng.

Respond to: Micronet Solutions, Inc., 2436 Concord, Woodbridge, IL 60517

Software Engineers, Programmer Analysts, Database Analysts needed by IL based IT firm. Please apply with 2 copies of your resume to: H.R. Department, Resource America, Inc., 514 Terry Avenue STE41, Aurora, IL 60506

Software Engineer and Senior Software Engineer/Systems Analyst wanted by Comp. Consult. Firm in Lisle, IL. Must have Master's Degree in Comp. and Info. Science. Respond to: TaRaq Systems Inc., 4518 Hatch Lane, Lisle, IL 60532

Software engineer needed by computer n/work & S/ware Dvlpmt Co. in Oakbrook, IL. Must have Bach. or equiv. in Computer Science and 4 yrs. exp. designing, developing, coding, debugging software for company's software products in an oops env., certified in MCSD & proficient in WINNT 4.0/2000, Java, and WebDev.

Respond to: HR Dept., Microhard Technologies, Inc., 600 Enterprise Dr., Ste 222, Oakbrook, IL 60523.

WEBMASTER. Oversee all aspects of the architecture, design content development and ongoing service of an internet based web site for non-profit religious organization. Convert written content into HTML documents. Utilize technologies such as Javascript, Active Server Pages, Real Audio and Adobe Photoshop within the web structure. Maintain, trouble shoot and provide security for web server hardware and software. Requires bachelor's degree in mass communication or computer related field. Send resume to: Tim Rickel, World Gospel Mission, P.O. Box 948, Marion, Indiana 46952-0948.

Programmer Analyst needed to design, develop, upgrade financial & distribution applications with GEAC (JBA) 21 modules on AS/400. Requires 2 yrs. exp. and Bachelor's degree in comp sci, engineering, math or business math.

Respond to: Fossil Partners, L.P., 2260 N. Greenville Avenue, Richardson, Texas 75082. Attn: Randy Hyne.

Database Administrators needed. Several entry and senior positions available for qualified candidates possessing Bachelor's or equivalent and 5 years of relevant work experience in the job offered or related occupation. Work with some of the following: Oracle, Oracle Replication, Ingres, Visual Basic, C, C++, Pro*Cobol, Pro*C, Erwin for data modeling, UNIX and SQL. Mail resume to: First Health-Dept. MB/HR, 3200 Highland Ave., Downers Grove, IL 60515 or fax at (630) 719-0076.

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We're seeking hands-on leaders to oversee Web development projects for our LA office. In addition to heading a team of Software Engineers, you will determine and address client needs, create and initiate project work plans/schedules as well as prepare and deliver client presentations. This role calls for a self-motivated individual who can balance multiple projects and priorities while adhering to strict budgetary and time guidelines. Requires strong client service skills and a familiarity with current Internet technologies. Ideal candidates will have a background in Internet project management, systems integration, technology consulting, sales and/or marketing.

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You'll be developing, testing and refining our first-of-breed technologies. To qualify, you must be a versatile self-starter experienced in client- and server-side scripting with one or more of the following: Java Script, HTML, C++ and/or DHTML. Requires a BS/BA (or equivalent background) in CS or a related field and experience with Web projects, ideally in a corporate IT environment. A working knowledge of a ODBC compliant database technology (Oracle, Informix, MS SQL Server, etc.) is also a skill set we are seeking, as is a familiarity with current Web technologies (XML, SSL, Web servers, LDAP, etc.). Ideally, you'll be skilled in NT or UNIX, consulting and project management.

Both positions involve local, national, and potentially international travel. Our compensation package features all the standard benefits plus stock options, 401(k) and unparalleled opportunities for career advancement.

Day

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Wilshire Blvd. Floor 7, Los Angeles, CA 90036
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DEPUTY CHIEF TECHNOLOGY OFFICER

The City of Seattle (www.cityofseattle.net) is the culture and technology capital of the Pacific Northwest. Its city government has been recognized for its innovation and sound management of information technology activities. The City's Department of Information Technology (DoIT) is seeking a Deputy Chief Technology Officer (DCTO) who will represent the department and the CTO to the Mayor, City Council, the public and the media and will help create and articulate a technology vision for the City. The DCTO's primary focus will be large applications and specifically the implementation of architectures, methods, and procedures to advance the City's management of IT. DoIT has a staff of 180 full-time employees and an annual budget of over $40 million.

Responsibilities include application development methodology, change management and the management of software assets, projects, issues, and performance reporting relative to applications.

Candidates should have demonstrated successes in improving the performance of large IT organizations through the implementation of methods and practices with extensive experience in application development and implementation. A background in public safety, utility, general government, major ERP systems and web-based applications is ideal. Candidates must be able to function well in a collaborative environment and develop broad-based support for change. Experience with a state or local government is highly desired.

To learn more about this opportunity go to http://www.cityofseattle.net/jobs/. Apply by sending a resume and cover letter to Jean Mayes, Human Resources, Department of Information Technology, City of Seattle, 710 Second Ave., Suite 450, Seattle, WA 98104. Please refer to Job #002-18. Position closes on December 31, 2000.

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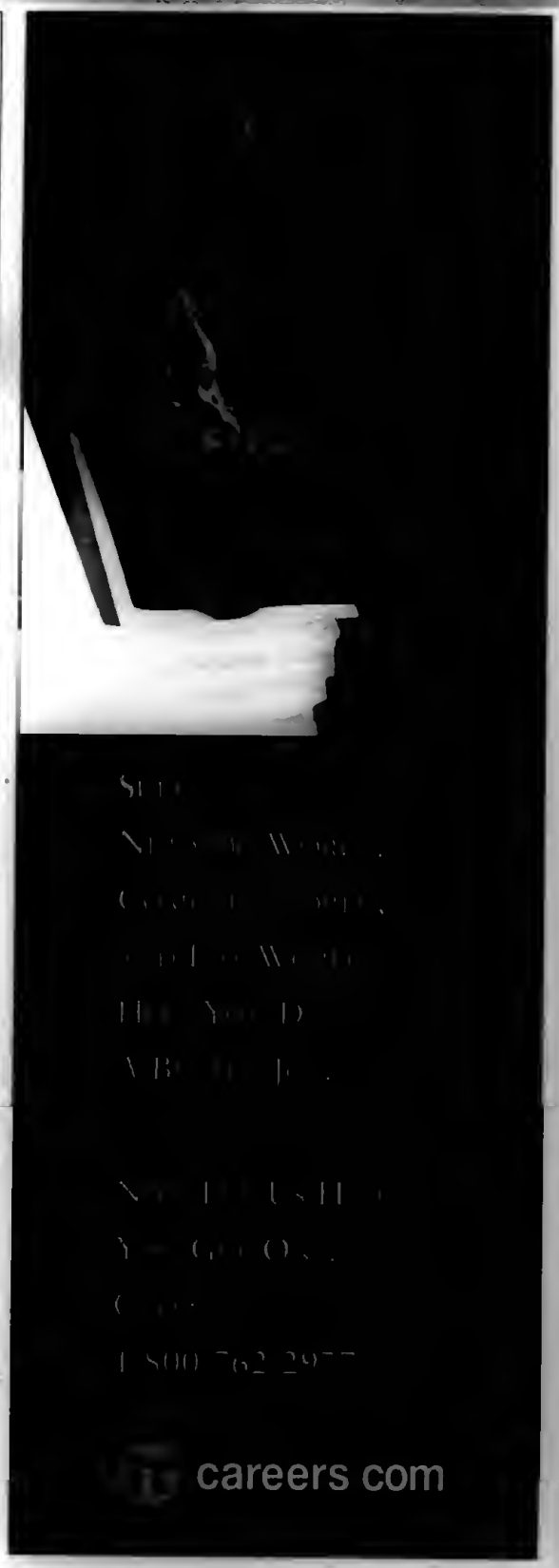
Presently we are seeking qualified networking and systems engineers to our team. If you possess skills in the following areas please apply:

- Network Engineers (Cisco, Nortel)
- Unix Administrator
- TIBCO Engineer
- Network Security Specialist
- Telecom Engineer
- Software Developers

All positions require BS/MS degree with a minimum of 2 to 3 years of experience in the field. Must possess excellent communication skills as well.

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LOS ANGELES, CA	ATLANTA, GA	PHOENIX, AZ	ST. LOUIS
Mon., January 15, 2001 LAX Sheraton Gateway Hotel	Mon., February 5, 2001 Georgia World Congress Center	Mon., February 26, 2001 Doubletree Guest Suites Phoenix	Mon., March 12, 2001 St. Louis Airport Marriott
WASHINGTON, DC	**PHILADELPHIA, PA**	**DETROIT, MI**	**DALLAS, TX**
Mon., January 15, 2001 McLean Hilton Hotel	Wed., February 21, 2001 Pennsylvania Convention Center	Tues., March 6, 2001 Hyatt Regency Dearborn	Tues., March 27, 2001 Dallas Convention Center

CALL 1-800-562-7469 FOR INFORMATION ON EXHIBITING OR ATTENDING!

If you can't make it to the events, submit your resume at BestDiversityEmployers.com

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Data Sharing

CPexchange is part of an ongoing effort by the companies to create a standard method for pooling data about potentially millions of consumers.

The group's aim is to eventually persuade software developers to use the specification when designing programs that let companies track, share and sell consumer data.

In his letter to FTC Chairman Robert Pitofsky, Shelby, who is the outspoken chairman of the Senate Select Committee on Intelligence, criticized the lack of clear-cut privacy protections being put in place to govern the use of personal consumer data once software developers and companies begin using the CPexchange standard.

"While this effort is intended to enhance commercial activity, I am troubled that insufficient attention has been given to the negative ramifications that the use of this exchange will have on the privacy of American consumers," Shelby wrote to the FTC.

A spokesman for the FTC said the commission is withholding comment on Shelby's request until it can be reviewed in detail. He wouldn't speculate when or what type of action may be taken.

Officials at IBM and Charlotte, N.C.-based First Union didn't return *Computerworld* requests for an interview. A spokesman for MicroStrategy, however, said that although the company hasn't played an active role in developing the CPexchange specification, privacy remains "of the utmost importance" for the Vienna, Va.-based company.

Authority Unclear

Mark Uncapher, who handles privacy issues for the Arlington, Va.-based Information Technology Association of America, said the FTC's authority in this case isn't clear.

"I am hard-pressed to see how, under existing law, any of this constitutes a deceptive trade practice," said Uncapher. "A year from now, when P3P [the Platform for Privacy Preference] is implemented in Internet browsers, consumers will be able to set their privacy preferences on their browser. Effectively, all this becomes completely a matter of consumer choice."

Most firms today rely on automated information systems to keep track of customers' buying patterns, in an effort to better understand and anticipate consumer likes and dislikes. These systems include tools for analyzing and storing data on where customers live, as well as their age, gender, marital status and even when they're most likely to be home to receive telemarketing calls.

However, customer information at most companies is stored in various locations, on different types of computer systems and in different formats, all of which make it difficult, if not impossible, for sales, marketing and support staffs to quickly access the most up-to-date information. The same problems have hindered business-to-business relationships such as those between retailers and their suppliers.

Double-edged Sword

Eric Schmitt, an analyst at Forrester Research Inc. in Cambridge, Mass., said that although there's a strong business case for a system like CPexchange, privacy issues could make it a double-edged sword for many companies.

"It's all about how you put the data to work," said Schmitt, who added that the companies involved will have to expend a substantial amount of resources to make sure the information is used in an appropriate manner once the standard is in place.

Wayne Madsen, a senior fellow at the Washington-based Electronic Privacy Information Center, said Shelby is on to something with his concerns about CPexchange.

"I just wish he would have the same concerns about the government's increasing desire to store personal information for law enforcement and national security purposes," said Madsen. "But it is encouraging that he is taking a skeptical view of e-business and privacy."

James Grady, an associate analyst at Giga Information Group Inc. in Cambridge, Mass., said consumers should be concerned anytime organizations or companies get together and agree to trade information.

One trend that has reared its head in the past two to four months, said Grady, is an increase in the number of companies that promise consumers that their personal information will be shared only with so-called authorized trading partners.

"It looks like companies are trying to be more selective about whom they share consumer information with, because it seems like they are finally getting called on it," said Grady. "I'm certainly seeing more and more dot-coms and brick-and-mortar companies that are very concerned about privacy and are definitely pushing in the opposite direction [of CPexchange]."

Continued from page 1

Air Canada

Ward, Air Canada's director of design and product management.

Though Air Canada won't charge for the service, Ward said the airline wants to use the test to evaluate service packages and pricing options, which will be key factors in determining whether the service is adopted by passengers in North America. Those travelers rarely use the high-priced seat-back telephones from Oak Brook, Ill.-based GTE Airfone Inc., which can cost a dollar per minute.

"It has to be less than Airfone charges. ... But I'm not sure that we can get to the level of $19.95 a month for unlimited access [charged by Internet service providers] for dial-up connections on the ground," Ward said.

Phil Lemme, vice president of business technology at Tenzing, said the company has installed Pentium-based servers on the five Air Canada 767s. Each plane's server collects e-mail sent by passengers jacked into the seat-back phones at a speed of 56K bit/sec., compresses it and, at five- to 15-minute intervals, "exchanges bundled and compressed" traffic with ground stations.

Lemme said Tenzing uses proprietary compression protocols to boost throughput. Web access is provided to passengers through a 10GB cache of popular Web sites loaded onto the aircraft before takeoff via tape, with periodic updates sent from Tenzing ground servers throughout the flight. Because of the caching system, passengers won't be able to go to every site on the Web, nor will all links on available sites be active, Lemme added.

Air Canada's Ward said the ability of the Tenzing system to use the already-installed Airfone infrastructure made installation easy. "We didn't have to do much to get it up and running, just the installation of the server."

Lemme said Tenzing has a contract to provide a LAN-based service for Hong Kong-based Cathay Pacific Airways Ltd., which plans to outfit 62 of its aircraft with high-speed 1.5M bit/sec. LANs linked to passengers' seats. That service is slated to start in April.

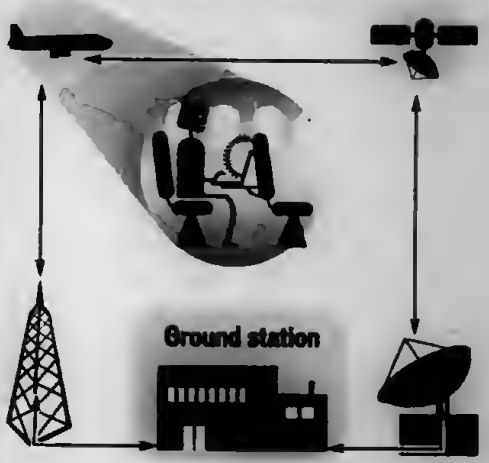
Compression will play a key role for Cathay Pacific, Lemme said, since the air-to-ground link is currently a 2.4K bit/sec. connection via a satellite operated by London-based Inmarsat Holdings Ltd. — though Inmarsat does plan to start offering 64K bit/sec. service late next year. While Air Canada manually loads the Web cache on each aircraft, Cathay Pacific will use wireless LANs to zap the information to its planes.

Starting next year, The Boeing Co. in Seattle has plans to provide high-speed service to airlines. The Connexion by Boeing service will include television as well as e-mail and Web access using broadband satellites.

Ward said Air Canada talked to Boeing, but "their [service] is out in the future, and they were not ready to do a type trial at this time."

Jupiter's Brooks said Tenzing has "a time-to-market advantage over Boeing, but it's only narrowband today."

Air-to-ground communications



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FRANK HAYES/FRANKLY SPEAKING

Quick and Dirty

HOW DID THE FBI get into this Carnivore mess? The feds have been using court-approved wiretaps for decades. Court-approved e-mail taps should have been an uncontroversial next step. Instead, the Senate Judiciary Committee wants to know why FBI Assistant Director Donald Kerr misled it when he testified in September about Carnivore's capabilities. A special review team from the Illinois Institute of Technology Research Institute (IITRI) says Carnivore has poor physical security and unreliable audit trails (see story, page 24). And a whole slew of lawsuits are trying to block Carnivore's use and pry loose every bit of information about what now looks like a hopelessly flawed system.

The simple answer: Carnivore was a quick-and-dirty hack.

Really, it was. Formerly secret FBI documents released under the Freedom of Information Act show that Carnivore's predecessor, Omnivore, was slapped together in a matter of weeks. And the Windows version, Carnivore, was ported from Unix to Windows NT almost overnight.

We also know *why* it was hacked together so quickly: FBI agents were actually using it in 1997 before it was finished and tested. Carnivore was hot stuff, in demand, and the bureau's Electronic Surveillance Technology Section had to deliver something, anything, as fast as possible.

And we know the results of that fast, sloppy job. We know Carnivore slows down network traffic — that was why Internet service provider EarthLink refused to have it installed on its network, which is what brought Carnivore to light.

We know Carnivore has no designed-in safeguards to prevent it from being used to monitor everything on a network. In fact, according to other formerly secret FBI documents, the FBI has even successfully tested that capability. (It's also something that Kerr and other FBI officials denied as recently as October.)

And we know that good security and audit features were left out of the system. That's from the IITRI report, which was supposed to make us all feel *better* about Carnivore. A bad-guy hacker could break into the PC running Carnivore through a dial-up modem — that's how FBI agents configure it — and then erase his tracks because the audit system is so lame.

We also know why the FBI's top brass seemed so clueless about Carnivore a few months ago: They may really have been clueless.

No, not stupid — just hopelessly uninformed. After all, like most quick-and-dirty projects, Omnivore and Carnivore were cheap.

Big-budget projects naturally grab attention, but Carnivore flew under that radar. In fact, the port from Unix to Windows NT was so cheap — less than $100,000 — that, under the bureau's rules, it didn't even have to be mentioned in official status reports.

Now we know Carnivore isn't safe. It's not robust. It's not OK.



So everything the brass was initially told about Carnivore was the usual baloney techies tell executives about quick-and-dirty projects — it's safe, it's robust, it's perfectly OK.

But now we know Carnivore isn't safe, or robust, or OK.

And we know what the FBI should do with this quick-and-dirty hack job: Scrap it — as quickly as possible.

Don't defend it. Don't try to bluff through Senate committees and legal hearings. Admit that Carnivore is flawed, so that judges issuing e-mail surveillance orders know what they're ordering. Then replace this piece of junk. Rebuild it from scratch, with the security and safeguards and technical oversight that Carnivore never had, designed in from the very beginning. This time, do it right — instead of quick and dirty. ◗

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SHARK TANK

HOT STUFF Newly hired IT pilot fish is shocked that his company's Web site has no firewall. He uses easily available scanning tools to demo the vulnerability to executives, who are impressed by the need: Get a firewall, they say, and fish gets it running fast. But the next morning, he gets a call from an unclear-on-the-concept marketing VP: "Can you check out your firewall? I think it's overheating. My room is unusually warm."

BIG COMPANY rolls out single sign-on to great fanfare. It's designed to let everyone from executives to the company's retailers and business partners access all company systems with one password. The catch: No password without a corporate ID number – which isn't available to retailers, joint ventures, contractors or even most salespeople, says an insider pilot fish – "nor will they let most of manufacturing *near* a computer."

90% SOLUTION This IT shop is 90% consultants, including the pilot fish who leads the data warehouse project. For "security reasons," he doesn't have a password to stop the data transformation engine, so when problems arise, fish gets a page and has to call a data admin – who can't do anything because she doesn't know how to use the tool that removes execution locks. "So she has to give me the password, I remove the locks, and the next day, the password is changed," says the fish. "I can drop the entire database from home, but I can't stop the engine because it isn't 'secure' to give consultants the password."

COMMUNITY COLLEGE that brags about its tech sophistication and computer curriculum has its weekly staff newsletter on a Web site that's password- and user-name-protected. Well, sort of, says insider pilot fish. Every week, all users get an e-mail reminder of the latest issue – including the single user name and site password shared by all staff members.

SECURITY RISK Boss at a county health department discovers that someone in accounting inappropriately accessed a file across the network. Boss calls pilot fish on the carpet: Why do we even *have* a network? he demands. And why does anyone besides the boss have supervisor rights? "I still haven't convinced him that the secretaries need to get work done and the people in accounting need to share files," sighs the fish. "It must be a burden to be paranoid."

Hey, you can trust me. **sharky@computerworld.com** You get a sharp Shark shirt if your true tale of IT sees print – or if it shows up in the daily feed on the Web at *computerworld.com/sharky*.

The 5th Wave



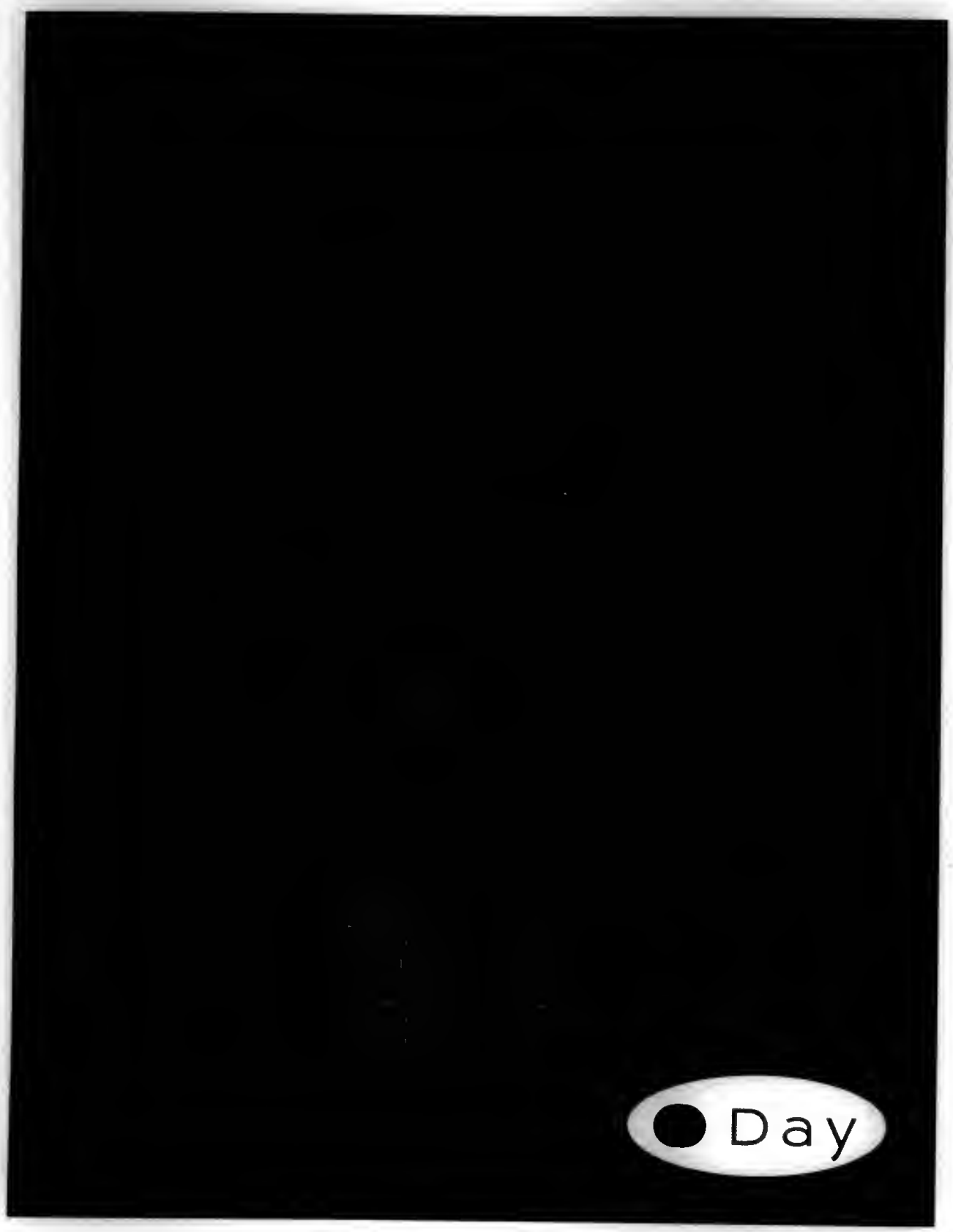


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